

REPORT
ON THE
HEALTH OF THE CITY
OF
BIRMINGHAM,
FOR THE YEAR 1901,
ALSO,
ON THE PROCEEDINGS TAKEN UNDER THE ACTS FOR THE
PREVENTION OF ADULTERATION
OF FOOD AND DRUGS.

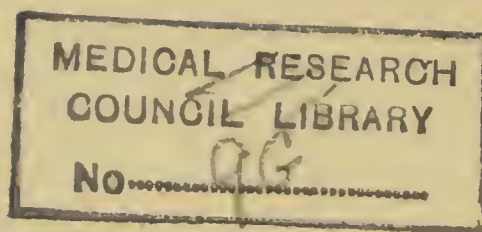
BY
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MEDICAL OFFICER OF HEALTH AND ANALYST TO THE CITY.

PRINTED BY ORDER OF THE HEALTH COMMITTEE

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HEALTH DEPARTMENT,

THE COUNCIL HOUSE,

BIRMINGHAM,

March 25th. 1902.

TO THE HEALTH COMMITTEE.

MR. CHAIRMAN AND GENTLEMEN,

I beg to present to you my Report for the year 1901—
my 29th Report as Medical Officer of Health for the City.

*Introductory
Remarks.*

The death-rate for 1901 was a fairly good one, being a little below the average. It was, as usual, far higher in the older, more crowded, and less sanitary parts of the town than elsewhere.

The year was marked by a widespread epidemic of scarlet fever, which excited great interest. The prevalence of the disease was, however, not so great as in 1890 and 1896.

A pleasing feature in the statistics is the great decrease in the prevalence and mortality of both diphtheria and typhoid fever. The diminution in the cases of typhoid fever and the smaller number of deaths among them are no doubt largely the result of the opening of the typhoid fever wards at the City Hospital. I still feel that there is great need of public hospital provision for cases of diphtheria.

It is very satisfactory to find that in spite of the hot weather the diarrhœal mortality was comparatively small.

In accordance with the instructions of the Local Government Board, I have again to indicate what are the more important sanitary measures needing to be carried out in the interests of the public health. These comprise the building of houses for the labouring classes, the demolition of a house or two in or abutting on every congested court, the removal in certain instances of entire blocks of very old and worn-out property, the conversion of pan and ashpit privies, the paving of courts, the prompt and careful removal of refuse, and the improvement of the domestic habits of the poor, through systematic visiting by the staff of women health visitors.

POPULATION.

Population.

In April last the decennial census of England and Wales was taken, and the unrevised returns issued by the Registrar-General show the population of Birmingham to have been at that time 522,204. It is estimated that at the middle of the year 1901 this figure had increased to 523,284.

It is fortunate that on this occasion the enumerated population of Birmingham comes very near the official estimate, which was 524,307. As you are aware, that estimate was based on the assumption that the rate of increase observed between 1881 and 1891 had continued unaltered from 1891 to 1901. Unfortunately such an assumption is liable to prove quite incorrect. Thus in Birmingham in 1891 there was a difference of 40,000 between the estimated and the enumerated population, and in many large towns discrepancies as great, or even greater, have been revealed by the recent census. In West Ham, for instance, the census returns show the population to have been 60,000 less than the estimated number. In Cardiff also the population is 40,000 below the estimate, while in Liverpool it is 50,000 above it.

These serious errors in the estimated populations of various towns, carrying with them, as of course they do, equally serious errors in the birth-rates and death-rates, point to the necessity for an actual enumeration of the people at shorter intervals than once in ten years. I hope that in future a quinquennial instead of a decennial census, at least partial if not complete, may be instituted.

Owing to the estimated population of Birmingham being on this occasion so near the truth, it will not be necessary for me to revise the birth-rates and death-rates given in my reports for the last few years, as I found it imperative to do after the census of 1891.

MARRIAGES.

Marriage-rate.

The marriages registered in the city in 1901 numbered 4,922, equal to a rate of 18·8 per 1,000 of the population, which is almost identical with the figure for 1900. The marriage-rates since 1892 have been as follows:—

	Marriage-rate per 1,000.
1892	17·9
1893	16·9
1894	17·3
1895	17·9
1896	20·0
1897	21·9
1898	20·9
1899	20·8
1900	18·9
1901	18·8

BIRTHS.

The birth-rate in Birmingham in 1901 was very low, Birth-rate. being only 32·1 per 1,000. I have only once recorded a lower birth-rate than this, viz., 31·6 in 1894. I think it probable that the breaking up of a number of homes, owing to the war in South Africa, may have been partly responsible for the low rate.

DEATHS.

I have corrected the deaths recorded in the city as far Death-rate. as possible by the exclusion of those of persons who did not belong to it, and the inclusion of persons belonging to Birmingham who died elsewhere. The death-rate for the year based on this corrected number of deaths is 19·9 per 1,000, and ranks among the most satisfactory rates in my records.

The death-rates recorded since I was appointed Medical Death-rates in Officer of Health in 1873 are shown in the following state- past years. ment:—

					Death-rate per 1,000.	
1873	24·8	Average 25·1
1874	...	...	...	...	26·8
1875	...	...	...	...	26·3
1876	...	...	...	...	22·4
1877	23·9	Average 22·2
1878	...	...	...	...	25·2
1879	...	...	...	...	21·8
1880	...	...	...	...	20·5
1881	19·8	Average 20·8
1882	...	...	...	...	20·8
1883	...	...	...	...	21·4
1884	...	...	...	...	21·6
1885	19·8	Average 20·5
1886	...	...	...	...	20·5
1887	...	...	...	...	20·4
1888	...	...	...	...	18·6
1889	19·7	Average 20·0
1890	...	...	...	...	22·0
1891	...	...	...	...	21·7
*1892	...	...	...	...	20·0
1893	21·5	Average 20·4
1894	...	...	...	...	18·2
1895	...	...	...	...	19·9
1896	...	...	...	...	20·4
1897	21·1	Average 20·4
1898	...	...	...	...	19·5
1899	...	...	...	...	20·5
1900	...	...	...	...	21·0
1901	19·9	

*Enlarged City.

The figures for the last ten years are not strictly comparable with those of the earlier years, owing to the extension of the city in 1891. By that extension certain districts were annexed to Birmingham, in which the death-rate was considerably lower than in the city itself. Consequently the city as now constituted has had a lower death-rate since

1891 than would have been the case if its area had not been altered. I find that the annexation of the added districts lowered the death-rate by about 0·5 per 1,000, so that it is necessary to add that amount to the death-rates recorded since 1891 before comparing them with those recorded prior to that year.

In my report for 1897 I pointed out that no real improvement had taken place in the death-rate of Birmingham for many years past, and it is a matter of great regret to find that since then the death-rate has been rather worse instead of better. It is only fair, however, to say that the high mortality of the last five years has been due in large measure to the series of unusually hot summers, which have had the effect of increasing the mortality from infantile diarrhœa.

Death-rates in
great towns.

In the 33 great towns selected by the Registrar-General for statistical purposes the death-rate was last year only 18·6, and in the whole of England and Wales it was 16·9. In London it was 17·6, in Liverpool 21·6, in Manchester 21·6, in Sheffield 20·3, in Leeds 19·3, and in Bristol 15·9.

Death-rates in
Wards.

The incidence of the mortality during the year upon the eighteen municipal wards is seen from the following statement:—

Ward.	Estimated population.	Death-rate per 1,000.
St. Mary's ..	15,904	29·7
St. Stephen's ...	23,765	26·6
St. Bartholomew's ...	26,857	25·9
St. George's... ..	20,230	23·2
Duddeston	23,921	23·2
Nechells	33,624	22·6
St. Paul's	14,954	22·6
Deritend	24,704	22·3
St. Thomas'	19,215	20·9
St. Martin's... ..	23,950	20·3
Ladywood	25,089	20·0
Saltley	42,250	17·6
All Saints'	41,444	17·5
Market Hall	9,807	17·4
Rotton Park	46,835	16·1
Bordesley	54,686	15·4
Balsall Heath	38,827	15·0
Edgbaston and Harborne...	30,795	13·1

Great disparity is shown, as usual, in the mortality in the various wards, the death-rates in the worst wards being about twice as high as in the best. The wards with the highest death-rates are the older, poorer, and less sanitary wards. The first three wards in the list, St. Mary's, St. Bartholomew's, and St. Stephen's, have over 50 per cent. of old-fashioned, ill-ventilated, back-to-back houses in them, while the last three, Bordesley, Balsall Heath, and Edgbaston and Harborne, have only about 15 per cent. of such houses. Similarly in the three worst wards about 65

per cent. of the houses have pan or ashpit privies, while in the three best the proportion is only about 39 per cent. These differences in the amount of ventilation, and the class of closet accommodation must, I am convinced, be held largely responsible for the difference in healthiness, and the unhealthy wards will not, as I have before stated, experience more satisfactory death-rates until they are provided with better ventilated houses and improved closet accommodation.

In order to throw a little more light on the cause of the difference in the death-rate in the three best and the three worst wards, I have obtained figures showing the prevalence and fatality in them of some of the more important causes of death. From these it appears that in the best wards measles had a death-rate of .28, as against .99 in the worst. Similarly whooping-cough had a death-rate of .23, against .54, and diarrhœa one of .87 against 2.84. Thus, from these three epidemic diseases the mortality was more than twice as high in the three bad as in the three good wards.

With regard to three other epidemic diseases, scarlet fever, typhoid fever, and diphtheria, I am able to give the case-rates, instead of death-rates, owing to their being notifiable diseases. From scarlet fever the case-rate was considerably higher in the best than in the worst wards, viz., 8.0, against 6.3. This will, perhaps, be a surprise to many, but I have observed continually that scarlet fever is not by any means a disease of the slums. Typhoid fever, on the other hand, claims most of its victims from the unhealthy parts of the town, the case-rate in the three best wards being only .72, against 1.92 in the three worst. Diphtheria was more prevalent in the bad wards than in the good ones, its case-rate there being 1.10, against .76.

Comparison of
three best and
three worst
Wards.

The figures relating to consumption are very significant, the death-rate from this terrible complaint being 2.70 in the bad wards, and only 1.14 in the good ones.

As regards cancer, there is not much difference in the death-rate, that of the three worst wards being .87, and that of the three best .80. The same is true of heart disease, which caused a death-rate of 1.38 in the bad, and 1.27 in the good wards.

Infantile debility and wasting was a far more common cause of death in the unhealthy than in the healthy wards, the death-rate being 1.82, against .53.

A study of these facts leads to the conclusion that the higher mortality in the unhealthy districts is due to more than one cause. In the first place the unhealthy surroundings lower the vitality of the inhabitants, and render them

an easy prey to various complaints. Then, again, the habits of the people are often far from healthy: they are inclined to excess in certain directions, and are careless about exposure to the weather. And, lastly, when they are ill their chance of recovery is greatly lessened by the lack of good nursing, suitable house accommodation, and proper medicine and food.

Everything that can be done, therefore, to improve the dwellings in the less healthy wards, and everything that can be done to improve the habits of the people living in them, must in the end have the effect of reducing their death-rates, and, as I have pointed out before, it is by reducing the abnormally high mortality in such wards as St. Mary's, St. Bartholomew's, and St. Stephen's, that the death-rate for the whole city, which has remained practically at a standstill for so many years, can be most readily and largely reduced.

Before leaving this subject, I would mention that all the information in my possession goes to show that even in the worst wards there are portions which have comparatively good death-rates. I am hoping that I shall be able to obtain before long from the census returns such details as to the population as will enable me to show just what parts of each ward have a high mortality, which at present I cannot satisfactorily do.

INFANT MORTALITY.

Infantile death rate.

I am pleased to say that the infantile mortality for the year compares favourably with that recorded in the previous five years, though it is still above that of the earlier years of the past decade.

The infantile deaths were at the rate of 188 per 1,000 births, against 197, 214, 190, 193, and 199 in the five years 1896 to 1900, and 165, 166, 198, 164, and 182 in the five years preceding 1896. Compared with the year 1900, the principal saving of infant life was in the mortality from bronchitis and pneumonia, which caused about 100 less deaths of infants last year than in 1900.

INFECTIOUS DISEASES.

Zymotic death-rate.

The zymotic death-rate for the year was 3.2 per 1,000. The deaths from the individual zymotics, as well as the cases of such of them as are notifiable, are given and compared with the average for the five previous years in the following statement:—

	Deaths in 1901.		Above or below the average.	Cases in 1901.		Above or below the average.
Smallpox ...	0	...	- 1	0	...	- 3
Measles ...	300	...	+ 54	—	...	—
Scarlet Fever ...	156	...	+ 72	3314	...	+ 1323
Diphtheria ...	85	...	- 77	533	...	- 237
Whooping Cough..	221	...	- 47	—	...	—
Typhoid Fever ..	111	...	- 11	615	...	- 42
Diarrhoea ...	792	...	+ 67	—	...	—

The most striking point in the above figures is the large number of cases and deaths from scarlet fever, which was widely epidemic during the year, while the figures for diphtheria and typhoid fever are very gratifying. The apparent increase in the mortality from diarrhœa is due to the inclusion under that heading of a large number of deaths from “zymotic” or “epidemic” enteritis, terms which have only lately come into use as synonyms for diarrhœa. Previously such deaths would no doubt have been certified simply as due to enteritis and placed under diseases of the digestive system, not under zymotic diseases.

SMALLPOX.

No case of smallpox occurred in the city during the year 1901, and up to the time of writing this report only two cases have been notified during 1902.

In view of the probability that the town may suffer to a considerable extent during the next two or three years, I wish to urge the advisability of vaccination and re-vaccination upon all who have not been subjected to the operation within the last few years.

The last epidemic of smallpox in Birmingham occurred in 1893 and 1894, as will be seen from the following figures :—

		Cases notified.		Deaths registered.	
1872	...	1977	...	299	
1873	...	794	...	122*	
1874	...	3791	...	637	
1875	...	824	...	173	
1876	...	11	...	0	
1877	...	50	...	8	
1878	...	27	...	5	
1879	...	4	...	0*	
1880	...	18	...	2	
1881	...	16	...	6	
1882	...	89	...	17	
1883	...	1202	...	110	
1884	...	471	...	64*	
1885	...	84	...	12	
1886	...	2	...	0	
1887	...	12	...	2	
1888	...	18	...	0	
1889	...	0	...	0	
1890	...	0	...	0*	
1891	...	47	...	7	
+1892	...	27+	...	0+	
1893	...	979	...	70	
1894	...	2074	...	171	
1895	...	100	...	8	
1896	...	14	...	4*	
1897	...	0	...	0	
1898	...	0	...	0	
1899	...	0	...	0	
1900	...	2	...	0	
1901	...	0	...	0	

53 weeks ‡ Enlarged City.

Smallpox cases
and deaths in
past years.

At the close of the epidemic of 1893-1895, I made a detailed examination of my records in order to ascertain the exact influence of vaccination on the prevalence and fatality of smallpox. This examination showed in the first place that for five years after its performance vaccination renders a child practically immune from an attack of smallpox. Only .25 per 1,000, or 1 in 4,000, of the vaccinated children under five took the disease, while among unvaccinated children at the same age the rate of attack was 13.33, or 53 times as great. In other words, unvaccinated children under five years old suffered 53 times as much from smallpox as the vaccinated children of the same age.

The figures further showed that, in addition to conferring almost absolute immunity from attack for the first five years, vaccination also conferred a very large degree of immunity for the first ten years. For among vaccinated children under ten years old only 1 per 1,000 was attacked by smallpox.

In the next place my records show that vaccination conferred complete immunity from death for the first 15 years after its performance, for the only vaccinated patient under 15 years old who succumbed to the disease was a boy who was ill with scarlet fever at the time he contracted smallpox, and who, therefore, could not properly be regarded as a victim of the latter disease.

Ignoring this one case, there was not a single death amongst the vaccinated patients under 15 years old. But among the unvaccinated patients at the same age period 30 per cent. succumbed to the disease.

Lastly, my records show that the epidemic of 1893-5 was the most severe visitation of smallpox which Birmingham has suffered during the last 25 years. But Birmingham has always been, comparatively speaking, a well-vaccinated town, and consequently in this unusually severe outbreak of smallpox only 3,153 cases occurred, or a ratio of six cases per 1,000 of the population. Now, shortly afterwards, Gloucester—a town in which the opponents of vaccination had obtained a hearing, and in which the compulsory powers of the Vaccination Acts had been set aside—suffered from an outbreak of smallpox, and no less than 1,981 cases, or a ratio of 45 per 1,000 of the population, were recorded. Moreover, in Birmingham only 248 patients died out of a total of 3,153, while in Gloucester 429 died out of a total of 1,981.

The figures on which the foregoing remarks are based are shown in the following tables:—

CASES OF SMALLPOX, 1893-1895.				Smallpox and Vaccination (continued).		
Age Periods.				Vaccinated.	Unvaccinated.	Doubtful.
All Ages	...	...	...	2701	343	109
Under 1 year	...	...	...	0	55	1
1 to 5 years	...	...	...	12	65	7
5 to 10 years	...	...	...	84	74	12
10 to 15 years	...	...	...	264	40	5
15 to 25 years	...	...	...	1095	57	30
25 to 45 years	...	...	...	1042	41	35
45 and upwards	...	...	...	204	11	19

The above statement shows very clearly that among the vaccinated portion of the community it is the older persons who suffer from smallpox—in other words the persons whose vaccination was performed many years ago, and the protective influence of which had diminished with lapse of time. But among the unvaccinated, young children were attacked more commonly than adults. I can see no possible explanation of this fact except that it was due to the protective influence of vaccination.

DEATHS FROM SMALLPOX, 1893-1895.						
Age Periods.				Vaccinated.	Unvaccinated.	Doubtful.
All Ages	...	...	...	121	107	20
Under 1 year	...	...	...	0	38	1
1 to 5 years	...	...	...	0	25	0
5 to 10 years	...	...	...	0	5	1
10 to 15 years	...	...	...	1*	3	0
15 to 25 years	...	...	...	20	12	2
25 to 45 years	...	...	...	79	19	11
45 and upwards	...	...	...	21	5	5

* Complicated with Scarlet Fever.

Here again the same difference in the incidence of the disease is shown. Among persons who had been vaccinated, the deaths were all at the higher ages—the ages furthest removed from the date of the vaccination. Among the unvaccinated exactly the opposite was the case, very young children contributing the majority of the deaths.

CASE-MORTALITY, PER CENT.						
Age Periods.				Vaccinated.	Unvaccinated.	Doubtful.
All Ages	...	...	...	4.5	31.2	18.3
Under 1 year	...	...	...	0.0	69.1	?
1 to 5 years	...	...	...	0.0	38.5	?
5 to 10 years	...	...	...	0.0	6.8	?
10 to 15 years	...	...	...	0.4	7.5	?
15 to 25 years	...	...	...	1.8	21.1	6.7
25 to 45 years	...	...	...	7.6	46.3	31.4
45 and upwards	...	...	...	10.3	?	?

Here again the figures are to my mind of a sufficiently striking character to afford undeniable evidence of the value of vaccination. In this table I have not calculated the percentage of deaths unless the number of cases was 30 or more, as ratios based on a very small number of instances are naturally often misleading.

As doubt is sometimes thrown on the accuracy and honesty of vaccination statistics, it may be well to state briefly how the above figures were obtained. Practically the whole of the cases were removed to the City Hospital, and immediately after admission there the medical superintendent enquired whether the patient had been vaccinated or not, and also looked for marks of vaccination. Particulars as to vaccination were sent on to me the same day, and recorded at once in my register of cases. Then at the close of the epidemic the cases which proved fatal were so marked, and the foregoing figures were abstracted from the records. It is quite impossible, therefore, to dispute the reliability of the statistics.

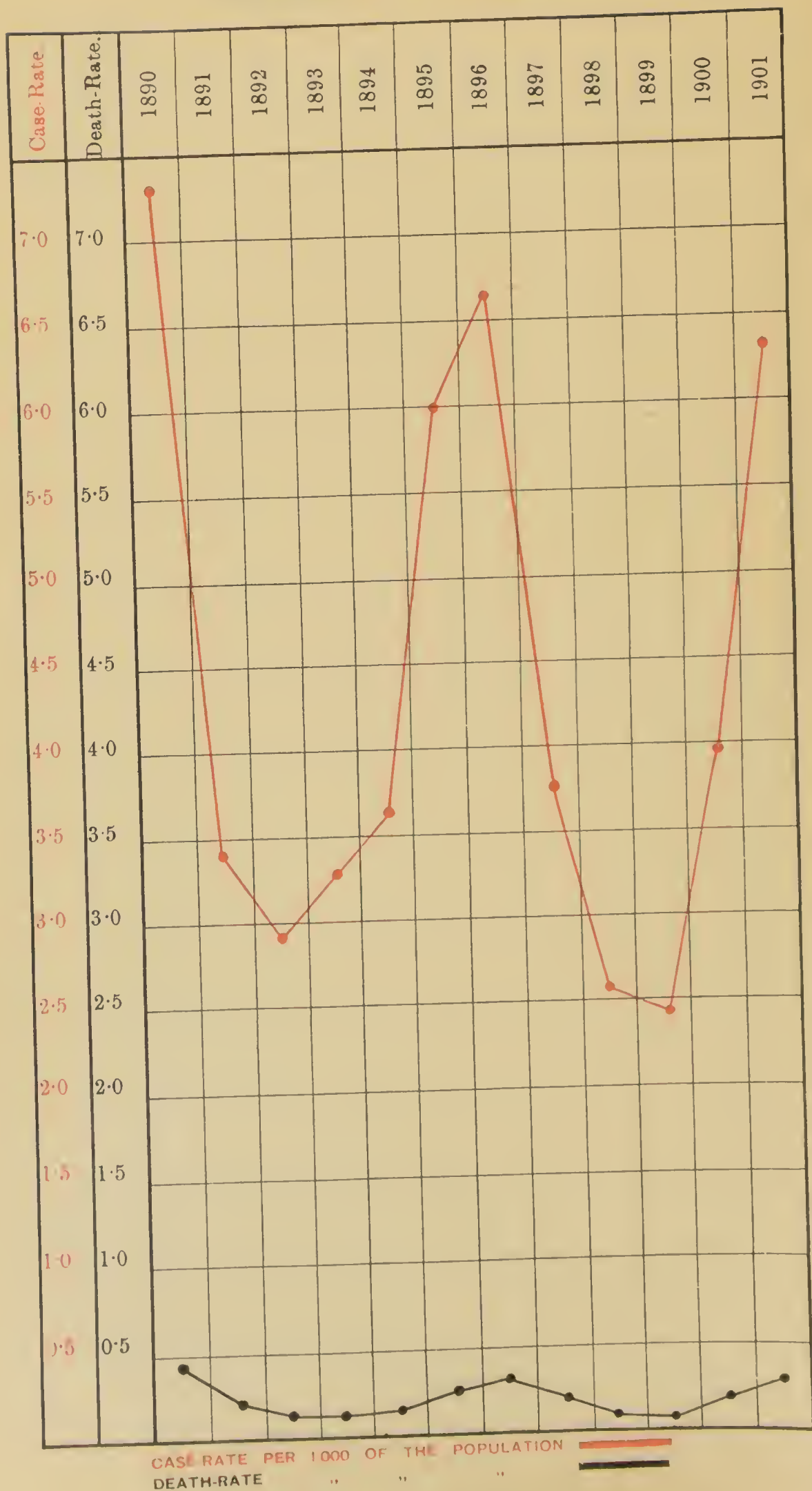
Vaccination in
Birmingham.

I have been supplied by the vaccination officers with figures relating to the vaccination of children whose births were registered in the year ending June 30th, 1901. From these it appears that 2,309 children died before vaccination could be performed, and 80·8 per cent. of the remainder had been recorded as successfully vaccinated at the time when the returns were prepared. In only 74 instances, or 0·4 per cent. of the total number of children born, was "conscientious objection" to vaccination made.

About 10 per cent. of the surviving children appear to have escaped the vigilance of the vaccination officers, while at the time of making the return 4·6 per cent. remained under their notice, but had not up till then been vaccinated. These are principally cases in which the parents defy the law, but do not even go to the trouble of making a "conscientious objection," and are not prosecuted by the Guardians as they ought to be. It seems to me that, under the present law every parent who will not have his child vaccinated, and will not obtain exemption in the proper manner, ought at once to be prosecuted.

I trust that now there is a prospect of an outbreak of smallpox in the near future all parents will have their children vaccinated and re-vaccinated after the lapse of ten years, and that all adults who have not been vaccinated and re-vaccinated will also undergo the operation. It is most desirable also that the law as to vaccination should be much more vigorously enforced than at present by the various Boards of Guardians: or if necessary by the vaccination officers themselves, as they appear to have power to institute prosecutions without, or even in opposition to, any instructions from the Guardians.

SCARLET FEVER.



MEASLES.

From this disease there were 300 deaths, or 54 more Measles. than the average number in the previous five years. It is well worth noting that measles caused twice as many deaths as scarlet fever, although the latter complaint was so widely prevalent and excited greater interest and alarm.

I received throughout the year the names of children who were absent from the elementary schools on account of the presence of measles in their homes. In each instance I sent to the house a copy of a hand-bill, giving directions for checking the spread of infection and preventing a fatal termination of the illness.

SCARLET FEVER.

The year 1901 was marked by an unusually large out- Scarlet Fever. break of scarlet fever, the number of cases notified being 3,314, while the deaths registered numbered 156. The prevalence and mortality in each year since notification became compulsory is indicated graphically on the opposite page.

The first point of interest revealed by the chart is that the prevalence of the disease in 1901, great as it certainly was, fell a little below that of 1896, and much below that of 1890. This fact may probably occasion some surprise, as there appears to have been an idea abroad that scarlet fever was unprecedentedly widespread last year. Possibly this impression arose from the circumstance that the demands on our hospital accommodation were greater than in any previous year, owing to a larger percentage of patients than usual being willing to be removed.

The chart, however, effectively disposes of the idea that scarlet fever was more prevalent last year than at any other time.

The cases of scarlet fever were widely distributed over Scarlet Fever the various wards of the city, as is shown below :— in Wards.

Scarlet Fever.						Case-rates per 1000.
Bordesley	...	...	...	...	...	10.1
St. Paul's	...	...	...	...	...	8.1
Deritend	...	...	...	...	...	7.7
Balsall Heath	...	...	...	...	...	7.2
St. Mary's	...	...	...	...	...	6.8
All Saints'	...	...	...	...	...	6.8
St. Bartholomew's	...	...	...	...	...	6.6
St. George's	...	...	...	...	...	6.4
Duddeston	...	...	...	...	...	6.2
St. Martin's	...	...	...	...	...	5.8
Saltley	...	...	...	...	...	5.6
St. Stephen's	...	...	...	...	...	5.5
Rotton Park	...	...	...	...	...	5.2
Edgbaston and Harborne	...	...	...	...	...	5.0
Ladywood	...	...	...	...	...	4.5
St. Thomas'	...	...	...	...	...	4.5
Market Hall	...	...	...	...	...	3.8
Nechells	...	...	...	...	...	2.5

A curious feature in the above statement is the impartiality with which scarlet fever seized upon the healthy and unhealthy parts of the town. Thus Bordesley, with one of the best total death-rates in the city, suffered more than any other ward from scarlet fever, while Nechells, which ordinarily has a high death-rate, suffered least of all from this particular disease. Again, Balsall Heath, which is almost as healthy as any part of Birmingham, had practically the same amount of scarlet fever as St. Mary's, which is probably the most unhealthy ward of all. It appears indeed as if the general healthiness of a district has little or no influence on its liability to scarlet fever.

Scarlet Fever
in small and
large houses.

During the fourth quarter of the year—the time when the disease was at its height—I obtained further information as to the class of houses invaded by it. From my enquiry, it appeared that of 1,369 cases occurring in that quarter, 466 were in three-roomed houses and 850 in larger houses, the remainder being in various institutions. It is estimated that there are about 40,000 three-roomed houses in the town, so that the cases which occurred in them were in the ratio of 12 per 1,000 houses. There are probably about 70,000 larger houses, and the cases in these were also in the proportion of 12 per 1,000. This is certainly an interesting point, showing as it does, that under present circumstances scarlet fever is no more prevalent in the three-roomed than in the larger houses.

Scarlet Fever
and Hospital
Isolation.

It seems to me, however, very probable that the incidence of the disease would be much greater on the small houses if the cases were kept at home instead of being removed to hospital. As a matter of fact in the quarter referred to, 444, or 95 per cent. of the cases in three-roomed houses were removed to hospital. From houses of four rooms and upwards 85 per cent. of the cases were removed, showing that the hospital is utilized, as it should be, to a greater extent by the tenants of small houses than of large ones.

A study of the number of inmates in the three-roomed houses invaded makes it apparent that in many cases removal of the patient to a hospital was urgently needed. In such houses there are only two bed-rooms, and if a scarlet fever patient had to be treated at home in such a house one bed-room would be required for the patient and the person nursing him—usually the mother—leaving one room only for the rest of the family. In most instances this second bed-room is in close contiguity to the first, and anything like proper isolation is impossible. Now I find that the inmates of the three-roomed houses in which scarlet fever occurred during the fourth quarter of 1901 were made up as follows:—

2 inmates in	...	9 instances.
3 " "	...	47 "
4 " "	...	78 "
5 " "	...	111 "
6 " "	...	105 "
7 " "	...	64 "
8 " "	...	42 "
9 " or more in	10	"

Supposing there had been no isolation hospital available, and one bed-room had to be given up to the patient and nurse, it would leave only one bed-room for four other inmates in 105 instances, five other inmates in 64 instances, six in 42 instances, and seven or more in 10 instances. And this second bed-room occupied by so large a number of inmates could scarcely be considered isolated at all from the one containing the patient.

I think these figures make it clear that an isolation hospital for scarlet fever cases is an absolute necessity for dealing effectively with cases occurring in small houses, whatever it may be in respect of those which occur in larger ones. And in this connection it may be remarked that in the quarter referred to only 106 cases went to hospital from houses containing seven or more rooms.

The relative fatality of scarlet fever at different periods of life is of much interest and practical importance, Last year, as usual, the great majority of cases were in children between 1 and 15 years old, the figures being as follows:—

Scarlet Fever
at various
ages.

Under 1 year	...	...	49 cases.
Between 1 and 5 years	...	...	1,110 "
" 5 and 10 years	...	...	1,286 "
" 10 and 15 years	...	...	497 "
" 15 and 25 years	...	...	266 "
" 25 and 45 years	..	...	97 "
" 45 and 65 years	..	...	9 "

The deaths registered at the same age periods were as follows:—

Under 1 year	...	...	10
Between 1 and 5 years	...	...	99
" 5 and 10 years	...	...	32
" 10 and 15 years	...	...	7
" 15 and 25 years	..	...	6
" 25 and 45 years	...	...	2
" 45 and 65 years	...	...	0

These figures give the following ratio of deaths to cases, showing the relative fatality of the disease at different ages:—

Under 1 year	...	...	20·4 per cent
Between 1 and 5 years	...	...	8·9 "
" 5 and 10 years	...	...	2·5 "
" 10 and 15 years	...	...	1·4 "
" 15 and 25 years	...	...	2·3 "
" 25 and 45 years	...	...	2·1 "

Among patients over five years old the greatest fatality was only 2·5 per cent. of the cases. But in the small number of infants under one year old the fatality was no less than 20·4 per cent., while in the large number aged from one to five years it was 8·9 per cent.

The lesson to be drawn from these figures is that, supposing a child must have scarlet fever at some period of its life, it is far better for the attack to be put off at any rate till the child is over ten years old. In fact, the younger the child is when attacked the greater is the probability that it will die. Very special efforts ought, therefore, to be taken to prevent young children from coming in contact with a case of scarlet fever, as the danger to them is so much greater while they are young than it is later on in life.

Scarlet Fever
outbreak at
Edgbaston.

In the early part of the year the occurrence of several cases of scarlet fever in the neighbourhood of Hagley Road caused some suspicion that they might be due to the milk supply. I, therefore, visited the farm from which the milk was obtained, and examined the members of the household and the employés, but I was unable to find any evidence that scarlet fever had existed among them. At the same time, in company of Mr. Malcolm, veterinary surgeon, I inspected the dairy cows, but we could find nothing about them to account for the outbreak of scarlet fever. I learned, moreover, that several of the families affected, using the same milk supply, were more or less acquainted with each other, and the possibility of personal infection could not, therefore, be excluded. No further spread of the disease has taken place, and I think the impression that the milk supply was causing the illnesses was quite erroneous.

Prevention of
Scarlet Fever.

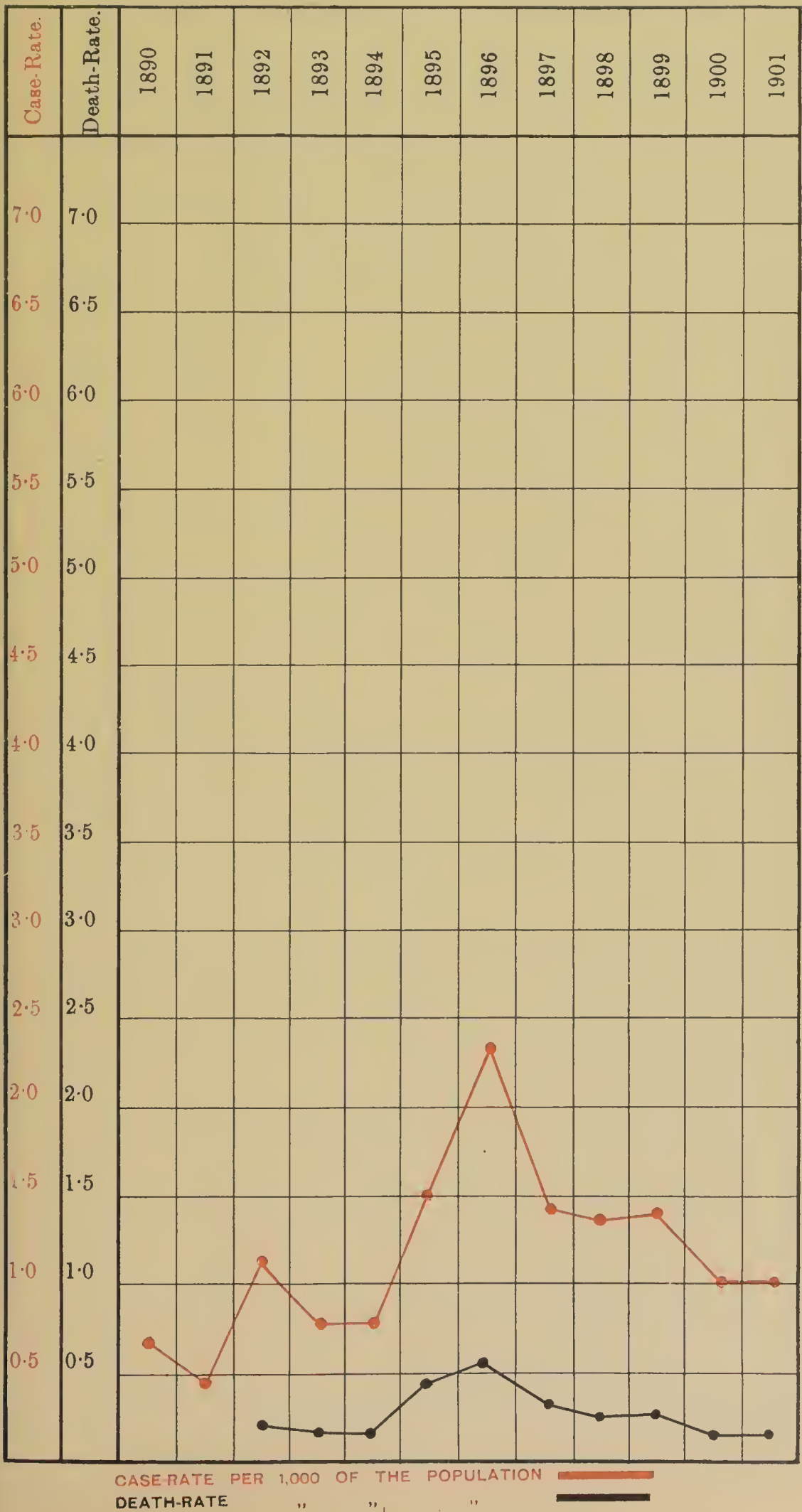
The means taken to limit the spread of scarlet fever include first of all the removal of as many patients as possible to the City Hospital. After removal or recovery or death of a patient the infected rooms are disinfected, first by spraying with a solution of chloride of lime, and subsequently by stripping off the paper and limewashing the walls. Infected articles of bedding, wearing apparel, etc., are disinfected at the Bacchus Road Station by superheated steam. No children are allowed to attend school from an infected house, and in certain circumstances inmates of the house are not allowed to continue their business avocations.

DIPHTHERIA.

Diphtheria.

The figures relating to the prevalence of and mortality from diphtheria are of a very satisfactory character, as will be seen from the chart on the opposite page. The case-rate for the year, which indicates the extent to which the disease was prevalent, was lower than in any year since 1894, while

DIPHTHERIA.



the death-rate was the lowest with one exception since 1891. The chart shows very clearly the rapid extension of the disease which commenced in 1895, as well as the slow diminution which has occurred since 1896, when the epidemic was at its height.

The actual number of cases notified last year was 533, and the deaths recorded amounted to 85, showing a case mortality of 16 per cent.

A very interesting feature in the statistics relating to diphtheria is the decrease in the fatality of the disease since the gratuitous distribution of anti-toxin was commenced in June, 1897. This decrease is clearly shown by the following figures :—

						Case-mortality from Diphtheria.
1892	...	...	...	...	...	19
1893	...	...	...	...	...	21
1894	...	...	...	...	...	22
1895	...	...	...	...	...	29
1896	...	...	...	...	...	25
1897, January to June	...	...	...	...	...	25
1897, July to December	...	...	...	...	...	20
1898	...	...	...	...	...	19
1899	...	...	...	...	...	20
1900	...	...	...	...	...	14
1901	...	...	...	...	...	16

With a view of assisting medical practitioners in their diagnosis of diphtheria cases, 336 bacteriological examinations of specimens from the patients' throats were made at the University, on behalf of your Committee, while as an aid to the curative treatment of the cases 252 doses of anti-toxic serum were issued, two doses as a rule being supplied for each patient.

In cases of diphtheria the rooms occupied by the patients are disinfected by the application of a solution of chloride of lime. If any children are attending school from an infected house, notice is sent to the school requesting that these children shall be excluded until it is safe for them to resume attendance.

WHOOPIING COUGH.

This disease claimed 221 victims last year, or 47 below the average number. It cannot, I think, be reiterated too often that measles and whooping cough, though and because they are so lightly regarded, cause a far greater mortality than scarlet fever or diphtheria.

I have a handbill in use urging parents to take precautions to prevent healthy children from coming in contact with whooping-cough patients, and also to take care that the patients themselves do not take cold. Among the poorer

class, however, it is difficult to act on this advice, and until it is carried out there is little hope of reducing the mortality from the disease.

TYPHOID FEVER.

Typhoid Fever.

The cases of typhoid fever notified numbered 615, a smaller number than in either of the three preceding years, but slightly higher than in any year prior to 1898. The chart on the opposite page shows both the prevalence of and mortality from typhoid fever since compulsory notification came into force in 1890.

In the fourth quarter of 1899 the number of cases showed a great increase, and throughout the whole of 1900 and the first quarter of 1901 they remained much above the average number. This will be seen from the subjoined figures :—

				Cases notified.	Above or below the average.
4th Quarter, 1899	...	...	...	417	+ 259
1st „ 1900	...	...	...	200	+ 56
2nd „ 1900	...	...	...	130	+ 31
3rd „ 1900	...	...	...	148	+ 26
4th „ 1900	...	...	...	373	+ 165
1st „ 1901	...	...	...	185	+ 24

Typhoid Fever Hospital.

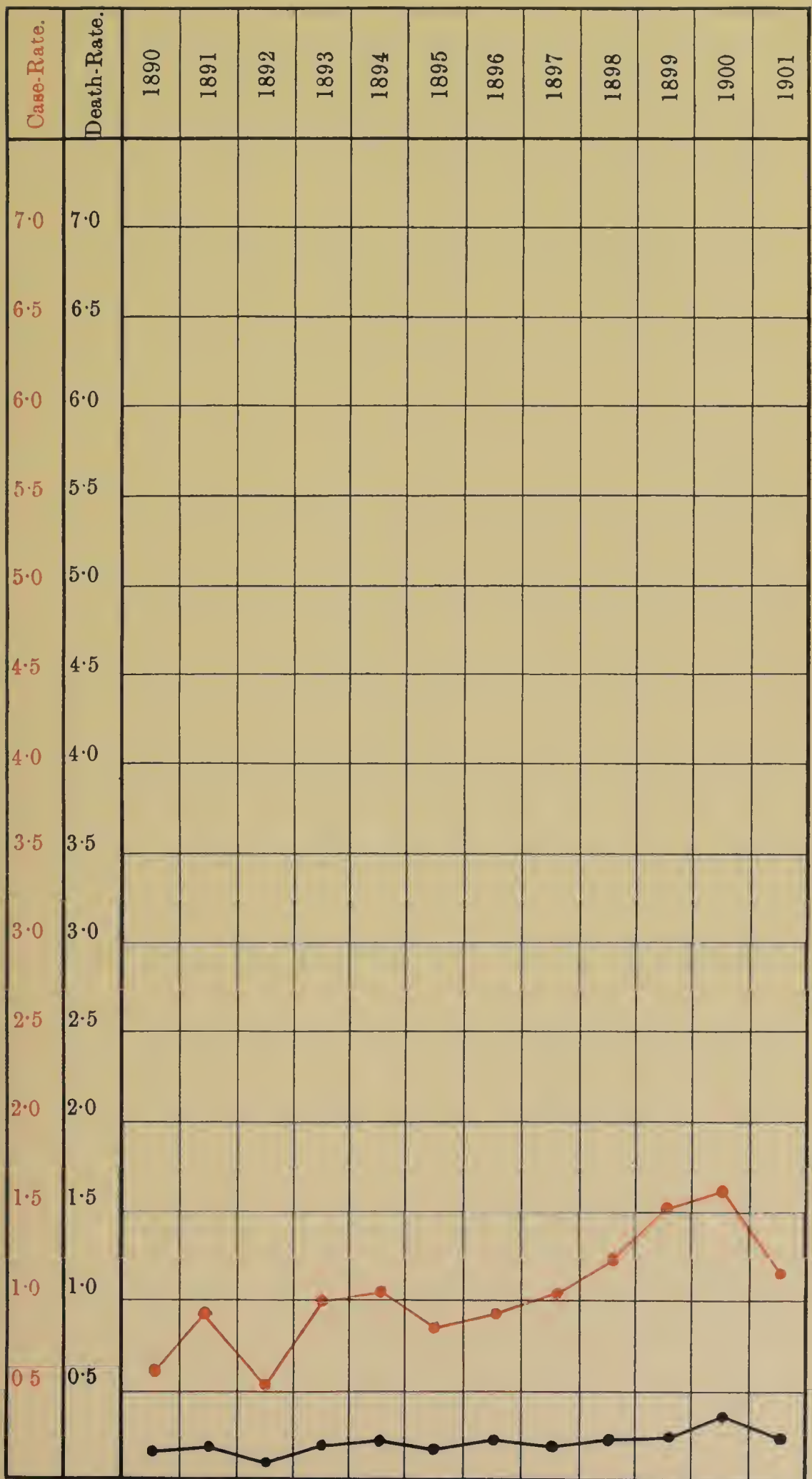
It was owing partly to this excessive prevalence of the disease that your Committee decided to act on the advice given by me in several of my reports, and to open a portion of the Little Bromwich Hospital for the reception of typhoid fever cases. Prior to this a small emergency hospital had been erected in which any isolated cases of smallpox might be treated, should any occur at a time when the Little Bromwich Hospital was occupied by cases of some other disease.

On March 18th, 1901, two pavilions at Little Bromwich Hospital were opened for the reception of typhoid fever cases, and from that time to the end of the registration year, which closed on Saturday, December 28th, 229 cases were admitted to them. It is gratifying to find that since the opening of the typhoid fever wards there has been on the whole a marked diminution in the cases notified, which have been as follows :—

				Cases notified.	Above or below the average.
2nd Quarter, 1901	...	...	...	100	— 9
3rd „ 1901	...	...	...	166	+ 33
4th „ 1901	...	...	...	164	— 89
1st „ 1902	...	...	...	142	34

Thus in the twelve months preceding the opening of the typhoid fever wards, there were 836 cases notified, or 246 above the average number, while in the twelve months after the opening there were only 572, or 99 below the

TYPHOID FEVER.



CASE-RATE PER 1,000 OF THE POPULATION

DEATH-RATE

"

"

"

average number. The provision of hospital accommodation for typhoid fever patients has thus been followed by a great diminution in the number of cases, a very satisfactory circumstance.

Of the 615 cases of typhoid fever, 338 were removed either to the Little Bromwich Hospital or some other institution. The advantage to the community of the removal of suitable cases is, I think, made evident by the decreased prevalence of the disease since public hospital provision has been made. But the advantage to the patients themselves is by no means to be overlooked, for while only 13 per cent. of the hospital-treated cases proved fatal, no less than 24 per cent. of the cases home-treated terminated in death.

The great infectiousness of typhoid fever, if proper isolation and disinfection are not carried out, is shown by the following example:—On December 3rd I received information that no less than five members of one household in the city were suffering from typhoid fever, and six days later I heard that three other members of the same family had fallen victims to the disease. Such an outbreak naturally excited great interest, but its origin was not difficult to discover. One member of the family had been suffering with the disease for two months without being aware of the nature of her illness. No attempt at isolation or disinfection had been made, with the result that she infected her mother, her sister, and her five brothers. The eight cases were removed to the City Hospital, and the father, the only other member of the household, escaped the disease. The advantage of hospital accommodation was strikingly manifested in this instance, for the nine members of this family, eight of whom were suffering more or less severely from typhoid fever, had at their disposal only one living room and two bed-rooms.

The prevalence of typhoid fever in the various wards is shown by the following case-rates:—

					Typhoid Fever. Case-rates per 1,000.
St. Stephen's	...	...	...	...	2.02
St. Bartholomew's	...	...	...	...	1.90
St. Mary's	...	...	...	...	1.83
St. George's	...	...	...	...	1.73
Deritend	...	...	...	...	1.66
Duddeston	...	...	...	...	1.51
Market Hall	...	...	...	...	1.43
St. Paul's	...	...	...	...	1.40
St. Thomas'	...	...	...	...	1.35
Saltley	...	...	...	...	1.19
St. Martin's	...	...	...	...	1.09
Ladywood	...	...	...	...	1.08
All Saints'	...	...	...	...	1.04
Rotton Park	...	...	...	...	.94
Nechells	...	...	...	...	.89
Bordesley	...	...	...	...	.86
Balsall Heath	...	...	...	...	.67
Edgbaston and Harborne	...	...	...	...	.52

These figures prove that typhoid fever shows a marked partiality for the unhealthy parts of the town, nearly all the wards with high general death-rates having suffered severely from typhoid fever. I am thus confirmed in the opinion I have previously expressed that typhoid fever makes its home in the poorer and dirtier parts of the town, where the house accommodation and sanitary arrangements are of an inferior character, and where adequate isolation and disinfection are scarcely possible.

Typhoid Fever
and Widal's
Test.

As an aid to the diagnosis of doubtful cases of typhoid fever, Widal's Test was carried out at the University on behalf of your Committee in 243 instances.

DIARRHŒA.

Diarrhoea.

It is satisfactory to find that, in spite of the very hot weather experienced during the summer, the deaths from diarrhœa and enteritis numbered only 998, which is 200 below the average number for the five years 1896-1900.

Effect of
cleanliness on
Diarrhoea.

Special measures were inaugurated by your Committee in 1898 with a view of reducing the death-roll from diarrhœa, which had been terribly high in 1897. These measures comprised the engagement of a staff of cleansers to swill and deodorize pan privies and ashplaces, clear out gullies and drain-traps, and cleanse the surfaces of courts in districts where such work is most necessary. At the same time greater efforts were put forth to obtain the paving of courts, and the conversion of ashpit privies and pan privies to water closets. The object of these measures was to improve the outside surroundings of the homes of the poorer classes, and so reduce not only the diarrhœal mortality, but also that from other diseases which are recognised as associated with filth conditions. A year later a staff of women health visitors was engaged to visit in the poorer parts of the town, and specially direct the attention of the persons visited to the great advantage of cleanliness, good ventilation, and suitable diet, especially for infants and young children. The work of the visitors has resulted in a great improvement in the internal condition of the houses visited, including the removal from them of a great deal of more or less offensive rubbish. Last year, for instance, the visitors had over 4,000 houses, which were in a filthy condition, cleansed by the tenants, and over 900 accumulations of filth, consisting principally of house refuse, removed from cellars.

In the three years which have elapsed since these special measures were inaugurated, the weather has been distinctly hotter than in the three previous years. This is shown by the following statement :—

PHTHISIS.



		Days with Temperatures of			Deaths from Diarrhoea and Enteritis.		
		70°—75°.	75°—80°.	Over 80°.			
1896	...	25	3	5	...	...	898
1897	...	17	10	4	...	...	1444
1898	...	27	9	5	...	...	1212
Totals		69	22	14	...	...	3554
		—	—	—			
1899	...	29	21	8	...	...	1411
1900	...	21	11	7	...	...	1022
1901	...	24	14	5	...	...	998
Totals		74	46	20	...	...	3431
		—	—	—			

Thus there were nearly twice as many very hot days in the last three summers as in the preceding three, yet the diarrhœal mortality, instead of increasing greatly, as might have been expected, shows a distinct diminution, which I have no doubt is chiefly due to the greater cleanliness now enforced in the poorer districts. The results therefore entirely justify the special action taken by your Committee.

PHTHISIS (CONSUMPTION).

The deaths set down to tuberculosis of the lungs during Consumption. 1901 numbered 903, while from other forms of tuberculosis there were 302 deaths, making a total of 1,205 deaths due to tubercular diseases.

The deaths from consumption (tuberculosis of the Consumption lungs) were much more numerous in the sanitarially inferior in Wards. wards, as is shown by the following figures :—

Ward.	Death-rates from Consumption	
St. Mary's	...	3·08 per 1,000
St. Bartholomew's	...	2·86 "
St. George's	...	2·62 "
St. Paul's	...	2·60 "
St. Martin's	...	2·34 "
St. Stephen's	...	2·27 "
Ladywood	...	1·99 "
Deritend	...	1·98 "
Duddeston	...	1·76 "
Market Hall	...	1·63 "
St. Thomas'	...	1·61 "
All Saints'	...	1·55 "
Rotton Park	...	1·50 "
Nechells	...	1·49 "
Bordesley	...	1·17 "
Balsall Heath	...	1·16 "
Edgbaston and Harborne	...	1·07 "
Saltley	...	1·04 "

I have no doubt whatever that consumption finds a Consumption and inferior house accommodation. suitable home in the small, badly ventilated, and ill-lighted houses to be found in the courts in the older parts of the city. This is clearly to be seen from the chart on the opposite page, which indicates the mortality from consumption in the municipal wards, side by side with the percent-

age of small houses in them. It will be seen that generally speaking the death-rate from consumption is highest where the number of small houses is greatest and *vice versa*.

During the latter half of the year inspections were made of 316 houses in which fatal cases of phthisis had occurred. Of this number 141 were three-roomed houses, and 175 were houses of four rooms or more. In proportion to the total number existing in the town the three-roomed houses had nearly half as many again deaths from consumption in them as the larger houses.

Prevention of
Consumption.

During the year 345 houses in which consumption had occurred were disinfected with a solution of chloride of lime.

Handbills have been in use throughout the year, giving directions for preventing the spread of consumption, and I am sending supplies to hospitals and institutions, and to any medical men interested in the matter, who have intimated their willingness to distribute them.

The means taken to prevent the use of tuberculous meat and milk are mentioned in another part of my report.

WOMEN HEALTH VISITORS.

Women Health
Visitors.

The duty of these officers is to visit from house to house in the poorer parts of the town, directing attention to the evil effects of bad smells, want of fresh air, and dirty conditions of all kinds, giving hints to mothers on the feeding and care of infants, and promoting the comfort of persons who are sick, both by advice and by personal help.

Last year the health visitors paid 23,504 visits, and 8,528 re-visits to the homes of the poor, the re-visits being made in order to see that such advice as had been given had been carried out. As showing the extent to which sickness prevails in the poorer quarters, I may say that at 7,361 of the houses visited—about one-third of the total number—there was illness of some kind.

Health Visitors
and Domestic
Cleanliness.

The visitors had to tell 4,207 persons to clean their houses, 5,990 to put away bed-room slops, 6,663 to open their windows, 2,001 to unstop their chimneys, 1,620 to cleanse their bedding, and 643 to burn house refuse and rubbish. All these are matters of cleanliness, which must, of course, greatly influence the healthiness and comfort of the home, but which are greatly neglected unless special means are taken to enforce them.

Health Visitors
and
overcrowding.

At 427 houses the tenants were urged to make use of a spare bed-room instead of crowding together, at 214 others

to screen off the beds where there were two in a room used by persons of opposite sexes, at 262 to move to a larger house, at 69 to get rid of lodgers, and at 166 to obtain more bedding, so that fewer persons might sleep in one bed. In work of this kind the advantage of having women officers who can speak freely to the women of the houses is apparent.

At 770 houses children were found in a very dirty condition, and the visitors saw that they were washed. In 337 instances they urged women to discontinue giving improper food, and to use something more suitable instead.

Health Visitors
and Neglected
children

At no less than 1,094 houses there was illness of a serious nature, and no medical attention had been obtained. In these cases the visitors urged that skilled advice should be sought at once, either from a private practitioner, a hospital doctor, or a poor-law medical officer.

Health Visitors
and Cases of
Illness.

A very important part of the year's work has been the attention given to the cellars of the houses visited. In 917 instances the cellars contained filth, which had been put there either by the present or a former tenant. Old and filthy mattresses, refuse from the house, and filth of many kinds had been allowed to accumulate, in some cases for years, until so large a quantity of very offensive matter had collected that special arrangements had to be made with the Interception Department for carting it away, after it had been removed by the tenant from the cellar to the yard. The evil effect of such an accumulation in a small house can scarcely be exaggerated, and the healthiness of the houses affected must be greatly enhanced by the removal of so much filthy rubbish.

Health Visitors
and Filth in
Cellars.

During the year arrangements were made with the School Board, by which I am supplied with the names and addresses of certain children who are sent home from school on account of "bad heads," and whom it would be well in the opinion of the teacher for one of our officers to visit. In many of the cases thus brought to my notice, the condition of the children was most pitiable, their heads being covered with running sores caused by the irritation from lice. Very often, either through ignorance or carelessness, nothing had been done to remedy this horrible state of things, and the visitors had to insist on the repeated washing and poulticing of the children's scalps, in addition to the cutting off of the hair. Such cases are of course kept in hand until the children are in a fit state to return to school. In some instances not only the children, but the older people also were in such a dirty neglected state as to be infested by lice.

Health Visitors
and Verminous
Children.

Health Visitors
Handbills.

Throughout the year the Visitors have distributed handbills on the management of the house, the feeding of infants, and the precautions to be taken in respect to infectious diseases.

Increase in
Number of
Visitors.

Since the number of Visitors was increased to eight, towards the close of the year 1900, it has been possible to extend the visiting to districts which previously had not been touched. The results of this additional work show that the need of visitation in certain parts of the outlying districts, such as Winson Green, Saltley, and Small Heath, is very great. Indeed, some of the houses in these newer and remoter districts are quite as badly neglected as some in the older, more central, and poorer parts of the town. After another year's experience I feel that a still further addition to the staff of visitors is required, and am glad that your Committee will shortly appoint four more.

Importance of
Domestic as
well as Public
Sanitation.

There is no doubt that the unhealthiness of the lower-class districts is largely the result of the habits of the people who live in them, as well as of the condition of the houses they occupy. Years ago, when Birmingham in common with other great towns was in a much more insanitary condition than at present, an enormous diminution of the death-rate was brought about by the carrying out of certain great public measures, such as the provision of purer water, better drainage, extended sewerage, more extensive paving of streets and roads, and improved privy accommodation. So far as I can judge, this improvement in the death-rate was directly due to the public sanitary measures then adopted, irrespective entirely of any alteration in the habits of the people. And I have no doubt that further public measures of a radical nature will produce again a marked decrease in the mortality, the measures most urgently needed being the thinning out of houses in all congested districts, the abolition of the pan privies, the paving of courts, and the greatest possible attention to the prompt and careful removal of refuse. But when all these reforms are effected, there will still be left the ill-health which arises from the dirty, neglectful, intemperate habits of the people themselves, and it is to remedy these, if possible, that Health Visitors are so valuable an adjunct to the sanitary staff.

HOUSE ACCOMMODATION.

House
Accommodation

In the Memorandum issued by the Local Government Board in October last relating to Annual Reports of Medical Officers of Health, the following paragraphs occur:—

“ The Report should be chiefly concerned with the conditions affecting health in the district, and with the means for improving those conditions. It should con-

tain an account, brought up to the end of the year under review, of the sanitary circumstances of the district, and of any improvement or deterioration which may have occurred during the year in these circumstances. Care should be taken to report fully and explicitly on the influences affecting or threatening to affect injuriously the public health in the district, and on the action which has been taken, or which may still be needed, with a view to combat those influences. It is of especial importance that the Medical Officer of Health should record what action has been taken to remedy unhealthy conditions which have been reported by him in previous Annual Reports, or in Special Reports presented during the year under review, and that attention should be called afresh, year by year, to such as remain unremedied.

“As subjects concerning which the Board desire to obtain, through Annual Reports of the Medical Officer of Health, not only definite general information, but record also of particular changes of condition that may have occurred incidentally or by action of the local authority, the following deserve to be especially borne in mind :—

“House accommodation, especially for the working classes: Its adequacy and fitness for habitation. Sufficiency of open space about houses, and cleanliness of surroundings. Supervision over erection of new houses.”

In accordance with the instructions contained in the foregoing paragraphs I have to again report that, while Need of more Small Houses. houses for the better-paid artizans are sufficiently numerous, the accommodation within the reach of the labouring classes is quite inadequate.

I, therefore, consider it most desirable that the City Council should be instrumental in the provision of labourers' dwellings within easy reach of the centre of the town. The kind of house which I have in my mind is an inexpensive structure which could easily be cleansed and kept clean, which would have as little destructible material in it as possible, but which would be light, airy and weather-proof, three qualities in which many of the houses in our courts are lamentably deficient.

My reason for urging that the Corporation should exert itself to provide such dwellings is that private enterprise has hitherto absolutely failed to supply them, at any rate for the last twenty years, and seems less likely to do so now than ever.

Until more accommodation of the kind has been provided, I do not see that much can be done in the way of demolishing the old and defective properties existing in many parts of the town.

The need for demolition of a good many houses arises not only from their structural defects, but also from want of that "sufficiency of open space about houses," referred to in the Local Government Board's Memorandum. It is in those wards of the city in which the houses are closely crowded together that the death-rate is so very high, while it is significant that in towns like Bristol, Cardiff, and West Ham, where houses have more space, the death-rate is remarkably low.

It seems most desirable, therefore, that a number of small, plain, inexpensive dwellings should first of all be erected which would be within the reach of unskilled labourers, and casual workers, of very small earnings. I am not at all convinced of the necessity of building such dwellings in the shape of very high blocks, because I do not think the conditions of life in Birmingham are such as to demand the housing of enormous populations on very small areas. It would be preferable that the dwellings erected be not more than two or at the outside three storeys high. It is by no means improbable that "flats" of a greater height than this would fail to attract tenants for the upper floors.

Improvement
of Congested
Courts.

The next step should be the formulation of some general plan for the removal of a house or two in those courts in which the buildings are too crowded. The houses so demolished would, of course, be those whose removal would afford the greatest amount of additional air space, ventilation, and light to the remaining houses. In my Report for 1897 I pointed out that in some cases a congested court could be advantageously dealt with by removing every third house in a long row, thus exposing one side of each of the remaining houses, in addition to its front, to the influence of light and air, increasing the yard space, and permitting of thorough ventilation by means of side openings. In other properties it might be desirable to remove a house fronting the street in order to open up the court to it, in others, where two rows of houses face one another, with only a few feet of intervening space, it might be necessary to remove one row altogether.

It is in these two directions—building the required number of new houses and demolishing those that are seriously obstructive of light and air—that the greatest amount of work is necessary to improve the house accommodation for the labouring classes. Another course, however, may be desirable in instances where all the property on a

particular area is so old, dilapidated, and over-crowded, that nothing can possibly remedy its defects, except clearance of the area, and reconstruction on a better plan. This is the only way of effectually dealing with houses on the back-to-back system which are huddled together.

In addition to any general scheme for improving the house accommodation for the working classes, it is necessary that constant attention be given to houses of each class, so that minor sanitary defects in them may be remedied. Last year your officers had 2,460 dirty houses cleansed by stripping and limewashing, and 2,463 repaired. Under the provisions of the Public Health Act they had 110 houses closed, 43 demolished, and 105 put into habitable repair. They also had better ventilation provided at 79 houses.

Defective
Houses.

During the year I represented 15 houses as unfit for habitation, under Part 2 of the Housing of the Working Classes Act, 1890.

Houses unfit for
Habitation.

The following extract from one of my Reports will show the class of houses dealt with in this way:—

“To the Housing Committee.

“Mr. Chairman and Gentlemen,

“I beg to make an official representation under the Housing of the Working Classes Act, Part 2, of three houses in 21 Court, Lancaster Street.

“The condition of all these houses is much the same, but as they must be taken individually I give below a detailed description of each.

“*House on left near top of yard in 21 Court,
Lancaster Street.*

“This house is obstructed by another building only 6ft. 8in. away. It contains three rooms, and has front ventilation only. In the living room the walls are damp, the back wall being boarded over. The floor also is damp, and the quarries are broken and uneven. The ceiling is bulged and broken, and has been papered over to hide the defects. The window does not open, and two squares of glass in it are broken. The pantry walls are very damp. The sink is defective, and has no bend-pipe. The stairs are dangerous; there is no hand-rail to them, and one of the stair treads is loose. In both of the bed-rooms the floors are broken and patched; the ceilings also are cracked. In the larger bed-room the gable wall is damp, and both the front and gable walls are badly bulged, and have been tied in. In the smaller bed-room the front wall is bulged;

Houses unfit for
Habitation
(continued.)

there is no fireplace in this room. The tiles on the roof are loose, and the external walls are perished. There is no dampcourse to the house. The yard outside this and the other houses is only partly paved, and very uneven; there is no lamp in it, it contains four pan privies, and a urinal, and in addition to the houses there is a quantity of void shopping.

“ I represent that this house is in a state so dangerous to health as to be unfit for human habitation.

“ *Top house on left in 21 Court, Lancaster Street.*

“ This house is obstructed by another house 6ft. 8in. distant; it is similar in its general character to the one just described. In the living room the walls are damp, so that the paper is hanging loose: the floor quarries are damp and broken, and the ceiling is cracked and very dirty. The pantry is dark and dirty, and has no ventilation. The stairs are very narrow and steep; there is no handrail, and one of the treads is loose. In both bed-rooms the floors slant very much, and are patched and shaky. In the larger bed-room the walls are cracked and damp-stained; the ceiling also is bulged and damp-stained, and the plaster is peeling off it. In the smaller bed-room there is no fireplace: the partition wall is broken, and the front wall bulged: while the ceiling is cracked, bulged, and dirty. The slates are very uneven, and the spouting is defective, causing dampness of the walls. There is no dampcourse.

“ I represent that this house is in a state so dangerous to health as to be unfit for human habitation.

“ *Top house on right in 21 Court, Lancaster Street.*

“ The wall of the living room near the door is damp and matchboarded up to the ceiling: the ceiling is broken and defective, and the window does not open. The pantry walls are very damp, and the window in the pantry does not open. The stairs are creaking and defective; they are all winders. In the first bed-room the back wall is damp and stained, and the partition wall has a large opening into the next house: the floor is patched, and has left the wall at the back of the room: the ceiling is cracked and badly bulged. In the second bed-room the walls are cracked: the floor is patched and uneven, and the ceiling is broken and bulged.

“ I represent that this house is in a state so dangerous to health as to be unfit for human habitation.”

During the year I inspected a large area to which my attention was called by a complaint of twelve ratepayers, under Section 5, Sub-section 2, of the Housing of the Working Classes Act, which reads as follows :—

Representation
of Unhealthy
Area.

“ A Medical Officer of Health shall make such representation whenever he sees cause to make the same; and if two or more justices of the peace, acting within the district for which he acts as Medical Officer of Health, or twelve or more persons liable to be rated to the local rate, complain to him of the unhealthiness of any area within such district, it shall be the duty of the Medical Officer of Health forthwith to inspect such area, and to make an official representation, stating the facts of the case, and whether in his opinion the said area or any part thereof is an unhealthy area, or is not an unhealthy area.”

At the completion of my inspection I made the following report :—

“ City of Birmingham,

“ Health Department,

“ The Council House,

“ Oct. 8th, 1901.

“ To the Estates Committee.

“ Mr. Chairman and Gentlemen,

“ I beg to report that I have received a complaint, dated June 4th, 1901, and signed by twelve ratepayers, of which the following is a copy :—

“ We, the undersigned, being persons who are rated or liable to be rated, under the provisions of the Public Health Act, 1890, do hereby certify to you that we believe the death-rate of Adams Street, Richard Street, Oxygen Street, Love Lane, together with Lister Street and parts of Dartmouth Street, to be 40 per thousand of the population or thereabouts.

“ We believe that such death-rate is mainly due to the insanitary condition of the houses, the lack of air space, and other causes, and that such streets, together with their courts and alleys, form an area which may be legally described as an ‘ unhealthy area ’ or an ‘ insanitary area.’

" We hereby respectfully request you to inspect such area, and, as Medical Officer of Health, make an official representation, as quickly as possible, to the Local Sanitary Authority, in order that such area may be effectively dealt with under the provisions of the Public Health Acts

(Signed)

" THOMAS J. BASS, Vicar of St. Laurence, Birmingham.

" ROBT. A. ELLIS, Curate of St. Laurence, Birmingham.

" T. J. BONELL, 6, 7, 8, 9, Great Brook Street, Birmingham.

" J. TELLORY, 13, Seymour Terrace, Aston, Birmingham.

" F. A. MADEW, 48, Legge Street, Birmingham.

" JOHN HASLAM, 84, Willows Road, Birmingham.

" HARRY MADEW, 38, Aston Brook Street, Birmingham.

" FRED BLINCOE, 88, Heneage Street, Birmingham.

" JOHN INCHLEY, 36, Lister Street, Birmingham.

" LEWIS H. BENNETT, 1, Carrot Place, Scholefield Street, Birmingham.

" GEORGE MASON, 43, Bagot Street, Birmingham.

" ROWLAND ASHFORD, 36, Bracebridge Street, Birmingham.

" June 4th, 1901.

" To Dr. Alfred Hill,

" Medical Officer of Health,

" Birmingham."

" In pursuance of the foregoing complaint I have made a careful and complete examination of the area which embraces the above streets and parts of streets. The entire area inspected comprises the whole of Adams Street, Love Lane, and Oxygen Street, the greater part of Richard Street, about one-half of Dartmouth Street, together with portions of Great Lister Street, Heneage Street, Holt Street, Lister Street, and Lord Street.

" The area measures about $14\frac{3}{4}$ acres, of which about $8\frac{3}{4}$ acres are occupied by dwellings, and 6 acres by works and uninhabited buildings other than dwelling houses. The number of dwelling houses upon it is 589, and if the statements as to the number of occupants of each house be correct, it has a population of 2,429, equal to 4.1 persons per house. If the entire area be

taken into account there are 165 persons to an acre (against 41 per acre for the whole city) upon it—but it includes many spaces, such as works, factories, and yards. If the area allotted to dwellings only be taken into account, the number of persons per acre is 272.

Representation
of Unhealthy
Area (continued)

“As regards the mortality on the area, I find that in 1899 and 1900 the death-rate was 40·3 and 38·7 per 1,000 respectively, giving a mean death-rate for the two years of 39·5. In the entire city the mean death-rate for the same period was 20·7, and in the entire wards of St. Mary and Nechells—the two wards in which the area lies—it was 29·6 and 21·4 respectively, so that the area in question compares very badly as to mortality with the city as a whole, and also with the whole wards of which it forms a part.

“The 589 houses on the area comprise 294 front and 295 back houses. These back houses have the disadvantage of opening into a court practically enclosed on all sides, instead of into a public street, where there is always a considerable current of air. Moreover, 250 out of the 295 back houses are approached by narrow tunnel entries, and owing to this arrangement the circulation of air about them is further restricted. Not one of the back houses has through ventilation, the majority being back-to-back with others. Moreover, 124 of the 294 front houses have no back doors, so that as regards ventilation they are as faulty in construction as if they were back-to-back. All these houses with front openings only are practically traps for bad air, their construction rendering the air stagnant and efficient ventilation impossible.

“The air of the courts is also greatly vitiated by the presence of large numbers of pan privies, the effluvia from which are not only a very serious nuisance, but they are an unquestionable injury to health. In many cases the nuisance is aggravated by a number of privies being built in a block, sometimes in a closely confined position, where the offensive odours cannot be swept away by the movement of air, as, for instance, in courts 8 and 9 Richard Street, where a dozen of such privies are arranged in a row; ten others at back of 84 Adams Street; and ten in a block in 6 court, Dartmouth Street. The total number of pans on the area is 216, with the inevitable result that a great nuisance always exists, but more particularly in hot weather. Many of the privies are in close proximity (within a few feet) of the nearest dwelling house.

“Some of the courts on the area are partly unpaved, leading to the accumulation of solid and liquid

filth, and saturation of the soil with the most dangerous impurities, rendering the process of cleansing practicably impossible, as they do not, from the nature of their surface, admit of being swilled—which they certainly ought to do. This is more especially the case in that portion of Adams Street which lies between Heneage Street and Great Lister Street, as shown by the parts coloured brown.

“ Most of the houses are old, dark, dirty, and in bad repair. Owing to the want of damp courses in the walls, to the fact that the quarries are laid on the damp ground, not being imbedded in cement, and to the existence of defective roofs and spouting, the walls and floors are damp and predispose to many forms of sickness.

“ A very common defect, leading to much discomfort, untidiness, and ill-health, is the character of the wall plaster, containing in many cases so little lime that it lacks the property of holding together, or adhering to the walls; it consequently, when touched, runs down like the sand in an hour-glass, and is frequently retained in position only as long as it is covered with paper and paste.

“ The plan of the area herewith shows at a glance that one part is occupied but sparsely by dwellings, and that the other part is overerowed with them. This is especially evident in Adams Street, Richard Street, Lord Street, and Oxygen Street. The common back-to-back arrangement of the houses, the rabbit-warren entrances to the courts, and the pan system of treating excrementitious matters are strikingly prominent defects of a great part of the house property on the area.

“ Taking into consideration the conditions above described, I am of opinion that the area in question is an unhealthy area, and that owing to the narrowness, closeness, and bad arrangement of certain houses, and groups of houses, within such area, causing want of light, air, and ventilation, and the absence of proper conveniences and other sanitary defects, they are dangerous or injurious to the health of the inhabitants, and that the evils connected with such houses and courts cannot be effectually remedied otherwise than by an improvement scheme for the re-arrangement and reconstruction of some of the houses within such area.

“ The plan accompanying this representation will prove of great use in showing the parts of the area over-crowded with houses (pink), the paved (blue), and un-



paved (brown) courts, the number and position of pan privies (yellow), and water-closets (white), the workshops and dilapidated buildings which are more or less obstructive (black), and wash-houses (purple).

“ I remain,

“ Mr. Chairman and Gentlemen,

“ Yours faithfully,

“ ALFRED HILL, M.D.,

“ Medical Officer of Health.”

The above representation is now under the consideration of the newly-appointed Housing Committee.

Early in the year 1898 I made a representation of an unhealthy area lying between Brearley Street, Hatchett Street, Newtown Row, and Summer Lane. No action was taken at the time with regard to this representation, the reason given by the Estates Committee being that it was thought desirable not to undertake any fresh work of this description until the Milk Street scheme, which was of the nature of an experiment, had been carried out.

Improvement of
Brearley Street
Area.

In the meantime considerable improvements were made in the property at the expense of the landlords, and in June, 1901, an enquiry made by me at the request of the Estates Committee showed that the death-rate had been greatly reduced, and in consequence it was not deemed necessary to deal with the district as an unhealthy area.

With regard to the “ supervision over the erection of new houses,” the Building Bye-laws in force in the town are of a stringent nature, and they appear to be efficiently enforced by the staff of building inspectors, acting under the direction of the City Surveyor.

Supervision of
New Buildings.

COURTS AND YARDS.

During the year the Cleansing Staff carried out 3,573 cleansings of courts, chiefly by arrangement with the owners or tenants, who bore the expense of the work. In executing this and similar work they cleared out a very large number of surface gullies and drain traps.

Cleansing of
Courts.

At the request of your officers 199 courts were paved, and 413 were repaired. There is still a considerable number of courts requiring paving, and I trust there will be no relaxation in the efforts to get this improvement effected.

Paving of
Courts.

EXCREMENT DISPOSAL.

Closet
Accommodation

Rather more than half the houses in Birmingham are supplied with water closets, a small number have ashpit privies, and the remainder—about two-fifths of the entire number—have pan privies.

Conversion of
Pan and
Ashpit Privies.

The most important work done during the year to improve the closet accommodation was undoubtedly the conversion of 718 ashpit privies and 486 pan privies to water closets.

Pan and Ashpit
Privies and
Ill-health.

I have frequently in my Annual Reports expressed the conviction that the existence of pan and ashpit privies in a populous neighbourhood is a serious injury to the public health. It has been proved that disease germs may remain alive in ashpit privies for very long periods, even when disinfection has been attempted to the greatest practicable extent. It is also beyond all doubt that the offensive emanations given off from nearly all pan privies, especially during the hot weather, are sources of ill-health, and there is good reason to suppose that they are a fruitful cause of diarrhoea and other ailments. It is to be noted also that the three towns to which I have already referred as having excellent death-rates, viz., Bristol, Cardiff, and West Ham, are towns in which practically the whole of the houses are provided with water closets. Furthermore, the wards with the highest death-rates in Birmingham are those in which pan and ashpit privies are most common. Thus, taking the year 1901 for an example, the six wards with the worst death-rates were wards in which about 60 per cent. of the houses have pan or ashpit privies, while the six which had the best death-rates had only about 40 per cent. of such closets.

The rate of progress in the work of converting ashpit privies is considerable, and the majority of those now existing are in comparatively good order, and are situated in the less crowded parts of the town, where any effluvia from them are less injurious than they would be in the more densely populous districts. But, unfortunately, the same is not true of the pan privies, many of which are badly constructed and situated in very unsuitable positions in confined courts, where light and ventilation are deficient, and where the nuisance from them is consequently very great. It is, therefore, most desirable that some more rapid method should be employed for their conversion to water closets.

Cleansing of
Pan Privies.

The Cleansing Staff effected 79,261 cleansings of pan privies during the year. The process consists of sweeping out, swilling, and deodorizing.

Limewashing
and Repairing
of Privies.

At the instance of your officers 785 privies and closets were limewashed, and 703 water closets and 433 pan privies were repaired.

A source of great trouble to the Department is the continual stopping up of the water closets in certain properties, owing principally to their misuse by the tenants, who throw all kinds of improper articles into the closet basin. It seems probable that some special measures will have to be taken to deal with tenants who are guilty of carelessness in this respect.

Improper use of
Water Closets.

REFUSE DISPOSAL.

The removal of house refuse is undertaken by the Corporation, the refuse being placed either in ashtubs, dry ash-places, or middens, and removed weekly where there are tubs, and at varying intervals in other cases.

Refuse
Disposal.

To facilitate the storage of the refuse in a cleanly fashion, and to render its removal less difficult, 868 additional "ashtubs" were provided last year at the request of your officers. In many cases these new receptacles provided were galvanized iron pails, which are a great improvement on the wooden tubs, and which are sold at the Interception Department at 10s. each.

Additional
Ashtubs
provided.

In order to keep the ashplaces in a better condition, the Cleansing Staff when at work in sweeping and swilling out privies also treat the ashplaces in the same way. Last year they effected 64,246 cleansings of ashplaces.

Cleansing of
Ashplaces.

The greater part of the refuse collected is burned in destructors. The remainder is sent to tips or sold for manure. A considerable quantity of Poudrette Manure is manufactured from the contents of the privy pans, and concrete slabs for paving and channeling are made from the incombustible "clinker" taken from the destructors.

At the request of the Interception Committee I inspected a large disused clay pit in Bordesley Green Road, and reported that in my opinion it might safely be used for the deposit of household "dust" and rubbish containing no excrementitious matter. I recommended that clinker and similar material be tipped into the pit alternately with the rubbish, and that the last ten or twelve feet be filled entirely with innocuous mineral matter, such as builders' refuse, clinker, etc. I also pointed out that the site must not be used for building purposes for a number of years after the pit has been filled up, when decomposition of the organic matter will have taken place.

Inspection of
Proposed
"Tip."

SEWERAGE AND DRAINAGE.

The City Surveyor informs me that the length of additional sewers constructed last year was two-and-a-quarter miles, making a total of 286 miles, exclusive of storm water sewers.

New Sewers
constructed.

Reconstruction
of Edgbaston
and Harborne
Sewers.

With a view to improving their condition the Edgbaston and Harborne sewers have for two or three years been in course of reconstruction. This work is now practically completed. The reconstruction and diversion of the Rea Main Sewer is also approaching completion.

Drains put in
order.

Under orders from the Health Department 439 private drains were relaid or repaired, 2,665 were opened and cleansed, and 1,765 were efficiently trapped.

Disposal of
Sewage.

The disposal of the sewage of Birmingham, together with that of Aston Manor, Handsworth, Smethwick, King's Norton, Sutton Coldfield, Perry Barr, Castle Bromwich, and Erdington, is under the control of the Tame and Rea District Drainage Board, who have a large sewage farm at Tyburn.

LODGING HOUSES.

Common
Lodging
Houses.

There are 76 common lodging houses in the city registered to receive 2,522 lodgers. They are kept under constant inspection, and are on the whole in a satisfactory state. There has indeed been a marked improvement going on in them for some years.

Only one keeper of a common lodging house was summoned during 1901, and he was fined £5 for allowing his house to be in a filthy condition.

Houses let in
Lodgings.

The houses let in lodgings (furnished rooms) are also in fairly good condition, though, owing to less strict supervision, their condition is not so satisfactory as the common lodging houses. Eighty-one fresh houses were registered as let in lodgings, making a total of 178 on the register, with accommodation for 847 lodgers.

Thirteen prosecutions were instituted during the year in regard to houses let in lodgings. Three of these were for allowing the house to be in a filthy condition, one for having an accumulation of filth in the cellar, six for neglecting to keep the premises in a proper state of repair, one for failing to provide light and ventilation on the stairs, and two for disregarding the bye-law as to the separation of lodgers of opposite sexes. In each of the two latter cases the magistrates inflicted a fine of £1 and costs. In two other cases, owing to the necessary work having been done, the summons was withdrawn; in four instances a fine of 10s. and costs was imposed, in four others a fine of 5s. and costs, while in one case the defendant was ordered to pay the costs only.

In some instances the keepers of houses let in lodgings which were in a very bad state of repair preferred to close the houses, rather than attempt to put them in order.

The total number of visits paid to common lodging houses and houses let in lodgings was 13,677, of which 12,763 were made by day and 914 by night.

CANAL BOATS.

The number of boats inspected during the year was 850, and 1,344 men, 418 women, and 385 children were found on them. Thirteen boats were put on the register, which at the end of the year contained entries relating to 373 boats. Canal Boats.

Seven cases of overerowding were discovered, and in six instances the regulations for separating the sexes were not complied with. Seven boats were not habitable, two were dirty, and two had not been painted for three years. As many as 17 boats were not provided with a proper receptacle for drinking water.

A number of boats were inspected in which the regulations as to registering and marking had not been carried out.

All the defects and breaches of regulations were duly remedied.

WORKSHOPS.

The visits paid to workshops numbered 10,637. Lime-washing was enforced in 1,382 instances, repairs were ordered and executed in 196, improved ventilation was obtained in 177, new water closets were provided in 219, and defective water closets were repaired in 334 instances. Numerous other insanitary conditions, due to defective drains, offensive privies, unpaved yards, and accumulations of refuse were also remedied. Workshops.

Under the Factory and Workshops Act, 1901, which came into force on the first day of the present year, several important alterations are made in the law relating to workshops. Additional powers are given for enforcing cleanliness and ventilation, and provision is made by which the Sanitary Authority may prohibit the giving out of certain classes of home-work to houses which are unwholesome or have infectious disease in them. New Factory and Workshops Act.

DAIRIES, COWSHEDS, AND MILKSHOPS.

At the end of the year there were 24 dairies, 2,697 milkshops, and 110 purveyors of milk on the register kept under the provisions of the Dairies, Cowsheds, and Milkshops Order. During the year 248 applications to be put on the register were granted, while 105 others were refused, chiefly because the premises proposed to be used were not suitable. The visits paid to milkshops numbered 11,578, and to dairies 503. Limewashing was ordered in 1,197 instances. In 392 Dairies and Milkshops.

milkshops the sale of lamp-oil, tripe, fish, pickles, etc., was prohibited. Dirty vessels for holding milk were found in 409 instances, and dirty churns were found at railway stations in 175 instances.

Cowsheds.

The inspection of cows and cowsheds is carried out by the Veterinary Surgeon, Mr. J. Malcolm, and his Assistant. They made 724 visits, and arranged them in such a way that all the cows were examined about once a month. As a result 75 cows were placed under special observation. Only one cow was found to be suffering from tuberculosis of the udder, and this was killed. Two were giving milk unfit for human consumption, and the sale of their milk was prohibited, while 60 were suffering from inflammation of the udder, and were removed from the dairy stock until recovery.

Both the cows and sheds were for the most part kept clean, though in some cases it was necessary to insist on greater attention to cleanliness.

BAKEHOUSES.

Bakehouses.

The number of visits paid to bakehouses was 1,154. In 190 instances limewashing had to be ordered, and at three bakehouses some sanitary defect had to be remedied.

Underground Bakehouses.

Under the provisions of the Factory and Workshops Act, 1901, it will be illegal, after January, 1904, to use any underground bakehouses, unless a certificate can be obtained from the Sanitary Authority that it is suitable for such a purpose.

SLAUGHTER HOUSES.

Slaughter Houses.

The inspection of slaughter houses is carried out by the officers of the Markets and Fairs Committee, under the direction of the Superintendent of Markets. Last year 10,289 visits were paid to them. Two persons were summoned for offences against the bye-laws, and were fined £2 and 10s. respectively. Only eleven slaughter houses were found to require cleansing.

Inspection of Slaughter House in Great Hampton Row.

Early in the year at the request of the Markets and Fairs Committee I inspected a slaughter house in Great Hampton Row. It had been in existence for many years, and had recently been greatly improved. There was no evidence that it caused any nuisance in the neighbourhood, and consequently, though I strongly object on general grounds to the existence of a slaughter house in a densely populous district and in a confined situation, I could not see any special reason for interfering with it, the more especially as it will in a short time be voluntarily given up. I should be glad, however, to see all the slaughtering of cattle and pigs done at the public abattoirs.

UNWHOLESOME FOOD.

During the year I examined a considerable quantity of ^{Bad Meat.} bad meat and certified that it was unfit for food. Twenty lots of bad meat were seized by the Inspectors, and 2,487 were handed over voluntarily to them. The total weight destroyed was about 247 tons. Twelve persons were summoned, 9 of whom were fined, and 3 sent to prison.

Five persons were fined for offering bad fish for sale. ^{Bad Fish.} Eleven lots of bad fish were seized, and 623 lots were surrendered, the weight of fish destroyed being about 70 tons.

About twenty-four tons of bad fruit was either seized ^{Bad Fruit.} or given up, and destroyed.

WATER SUPPLY.

The public water supply of Birmingham is derived ^{Water Supply.} partly from streams and partly from deep wells. At present it has proved sufficient for the needs of the district. I made a monthly analysis of the water as delivered to the consumer, and 164 analyses on behalf of the Water Committee of samples taken from the streams and wells which furnish the supply. On the whole the water supplied by the Corporation is of good quality, as will be seen from the results of analysis given in Table XI.

Considerable progress has now been made with the project for bringing a supply of water from Radnorshire. When this scheme is carried out Birmingham will possess a water supply of great purity and excellence.

A small number of houses in the city are still supplied ^{Well Water.} with surface wells. These wells I regard as a distinct danger to health, and I should like to see them all abolished. Their closure is only a question of time.

In past years a great number of shallow wells have ^{Disused Wells.} been closed and only covered over. I am afraid that many of these are a source of serious danger, and consider it most important, as a matter of public safety, that disused wells be filled up.

SMOKE NUISANCES.

Nearly 16,000 observations of the emission of smoke ^{Smoke.} from factory chimneys were made, with the result that 116 manufacturers were reported to have broken the regulations. Of these 80 were cautioned, and 35 summoned and fined.

OFFENSIVE TRADES.

No application to establish an offensive trade was made ^{Offensive Trades,} during the year. The number of establishments where such trades are carried on is only small, and no complaints regarding them were received.

ABATEMENT OF NUISANCES.

Abatement of Nuisances.

More than twenty thousand formal or informal notices were issued for the abatement of nuisances. Details of the work done in consequence are given in Table XII.

Forty-eight summonses were issued in respect of nuisances. Eleven of these were taken out against tenants who allowed their closets to be in a filthy condition, and who were cautioned by the magistrates, but not fined. The penalties inflicted in the other cases amounted to £13, and the costs to £14 18s.

ANALYTICAL WORK.

Miscellaneous Analyses.

In addition to the samples analysed by me as Public Analyst for the city, I also examined the following articles submitted by various departments of the Corporation:—

					Number of Samples.
WATER COMMITTEE—					
Water and Sewage	...	...	...	...	175
Boiler Preparations	...	...	...	...	3
				—	178
HEALTH COMMITTEE—					
Water	...	...	...	...	26
Confectionery, Jam	...	...	...	...	24
Poudrette, Disinfectants	...	...	...	...	17
Cloth	...	...	...	...	13
Various articles	...	...	...	...	10
				—	90
PUBLIC WORKS COMMITTEE—					
Water, Sewage	...	...	...	...	39
Paints, &c.	...	...	...	...	11
				—	50
OTHER COMMITTEES—					
Water, &c.	...	...	...	...	6
TOTAL SAMPLES					324

I remain,

Mr. Chairman and Gentlemen,

Your obedient Servant,

ALFRED HILL, M.D.,

Medical Officer of Health.

APPENDIX.

TABLE I.—VITAL STATISTICS OF WHOLE DISTRICT DURING 1901 AND PREVIOUS YEARS.

Year.	Population estimated to middle of each year.	BIRTHS.		TOTAL DEATHS REGISTERED IN THE DISTRICT.					Total Deaths in Public Institutions in the District.	Deaths of Non-residents registered in the District.	Deaths of Residents registered beyond the District.	NETT DEATHS AT ALL AGES BELONGING TO THE DISTRICT.	
		Number.	Rate.*	Under 1 Year of Age.		At all Ages.						Number.	Rate.*
				Number.	Rate per 1,000 Births registered.	Number.	Rate.*						
1	2	3	4	5	6	7	8	9	10	11	12	13	
1891.	479,193	16,166	33·8	2,673	165	10,077	21·1	1,650	—	—	—	—	
1892.	483,526	16,026	33·2	2,664	166	9,642	20·0	1,411	—	—	—	—	
1893.	487,897	15,881	32·6	3,146	198	10,445	21·5	1,631	—	—	—	—	
1894.	492,301	15,505	31·6	2,539	164	8,946	18·2	1,549	—	—	—	—	
1895.	496,751	16,014	32·3	2,910	182	9,863	19·9	1,656	—	—	—	—	
1896.	501,241	16,582	32·5	3,265	197	10,405	20·4	1,554	—	—	—	—	
1897.	505,772	16,771	33·2	3,594	214	10,668	21·1	1,489	—	—	—	—	
1898.	510,343	17,289	34·0	3,287	190	9,936	19·5	1,518	—	—	—	—	
1899.	514,956	17,609	34·3	3,398	193	10,446	20·3	1,614	247	325	10,524	20·5	
1900.	519,610	16,941	32·7	3,366	199	10,756	20·8	1,911	267	393	10,882	21·0	
Averages for years 1891-1900	499,159	16,478	33·0	3,084	187	10,118	20·3	1,598	—	—	—	—	
1901.	523,284	16,735	32·1	3,150	188	10,357	19·8	1,802	302	347	10,402	19·9	

* Rates in Columns 4, 8, and 13 calculated per 1,000 of estimated population.

Total population at all ages at Census of 1901 522,204.
 Number of inhabited houses " 107,831.
 Average number of persons per house at Census of 1901, 4·8.

† 53 weeks.
 Area of District in acres, 12,705.

TABLE II.—VITAL STATISTICS OF SEPARATE LOCALITIES IN 1901 AND PREVIOUS YEARS.

Year.	Population estimated to the middle of each year.	Deaths at all ages.	Death-rate per 1,000.	Population estimated to the middle of each year.	Deaths at all ages.	Death-rate per 1,000.	Population estimated to the middle of each year.	Deaths at all ages.	Death-rate per 1,000.	Population estimated to the middle of each year.	Deaths at all ages.	Death-rate per 1,000.	Population estimated to the middle of each year.	Deaths at all ages.	Death-rate per 1,000.
Wards	ROTTON PARK.			LADYWOOD.			ST. PAUL'S.			ST. GEORGE'S.			ST. STEPHEN'S.		
1899	41,673	758	18·2	25,140	496	19·8	17,118	376	22·0	20,641	490	23·8	23,533	624	26·6
1900	43,339	773	17·8	25,177	484	19·2	17,025	346	20·4	20,473	539	26·3	23,385	615	26·3
1901	46,835	752	16·1	25,089	502	20·0	14,954	338	22·6	20,230	469	23·2	23,765	633	26·6
Wards	ST. MARY'S.			MARKET HALL.			ST. THOMAS'.			ST. MARTIN'S.			EDGEASTON AND HARBORNE.		
1899	15,536	476	30·7	11,030	207	18·8	18,682	428	22·9	23,941	503	21·0	30,313	418	13·8
1900	15,570	475	30·4	10,858	234	21·5	19,057	399	20·9	24,143	527	21·9	30,718	441	14·4
1901	15,904	472	29·7	9,807	171	17·4	19,215	402	20·9	23,950	485	20·3	30,795	402	13·1
Wards	DERITEND.			DUDDESTON.			NECHELLS.			BALSALL HEATH.			SALTLEY.		
1899	25,346	618	24·4	24,038	512	21·3	33,773	761	22·5	38,120	666	17·5	36,717	672	18·3
1900	24,771	645	26·0	24,274	569	23·4	33,701	739	21·9	38,579	619	16·0	40,829	681	16·7
1901	24,704	550	22·3	23,921	555	23·2	33,624	760	22·6	38,827	582	15·0	42,250	741	17·6

NOTE.—The inmates of large Institutions are not included in the Ward populations, and the deaths amongst them have been referred, as far as possible, to the Wards in which the deceased persons had previously resided.

TABLE III.

Cases of INFECTIOUS DISEASE NOTIFIED during the Year 1901.

NOTIFIABLE DISEASE.		CASES NOTIFIED IN WHOLE DISTRICT.								TOTAL CASES NOTIFIED IN EACH WARD.																			
		At all Ages.	At ages-- Years.						65 and up.	1	2	3	4	5	6	7	St. Bartholomew's.	Market Hall.	St. Thomas.	St. Martin's.	Edgbaston and Harborne.	Deritend.	Bordesley.	Duddeston.	Nechells.	Balsall Heath.	Saltley.	Institutions.	
			Under 1.	1 to 3.	5 to 10.	10 to 15.	15 to 25.	25 to 45.																					45 to 65.
SMALLPOX	...	...	...	...	...	...	...	...	...	242	281	114	121	130	130	109	178	37	87	139	155	191	554	148	84	281	235	98	
SCARLET FEVER	...	3314	49	1110	1286	497	266	97	9	...	61	26	40	16	27	22	13	21	8	7	26	28	17	29	27	26	32	31	14
DIPHTHERIA	...	471	9	130	110	57	79	67	19	...	2	6	2	1	4	6	4	7	...	2	7	1	6	3	1	2	1	7	...
MEMBRANOUS CROUP	...	62	9	43	5	4	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TYPHUS FEVER	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
ENTERIC FEVER	...	615	2	40	86	74	180	201	29	3	44	43	21	35	48	29	51	14	26	26	16	41	47	36	30	26	50	5	
SIMPLE CONTINUED FEVER	...	2	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...
RELAPSING FEVER	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
PUERPERAL FEVER	...	32	...	...	...	...	10	22	...	...	5	2	1	...	1	...	5	1	...	1	...	3	...	1	5	5	1	...	...
CHOLERA	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
ERYSIPELAS	...	726	28	49	29	104	239	184	64	58	61	45	22	18	21	25	67	13	20	43	42	17	43	30	49	50	70	32	...
PLAGUE	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
TOTALS	...	5223	97	1375	1516	661	640	241	67	412	419	229	182	214	228	180	329	73	142	243	242	275	676	245	196	395	394	149	...

TABLE IV.
DEATHS OF PERSONS BELONGING TO BIRMINGHAM DURING THE YEAR ENDING DECEMBER 28TH, 1901.

1901.	AGES.							WARDS.															City.					
	AGES.							WARDS.																				
	0-1	1-5	5-10	10-15	15-25	25-45	45 and up.	Bottom Park.	All Saints.	Ladywood.	St. Paul's.	St. George's.	St. Stephen's.	St. Mary's.	St. Bartholomew's.	Market Hall.	St. Thomas.	St. Martin's.	Edgbaston & Harborne.	Deritend.	Bordesley.	Puddleston.		Nechells.	Balsall Heath.	Salfley.	Not located.	
ALL CAUSES	3150	1440	192	94	495	1397	2000	1724	752	502	338	469	633	472	696	171	402	455	402	550	543	555	760	582	741	324	10,402	
Smallpox																												
Measles	62	228	9		1				25	6	9	21	21	17	28	1	10	11	6	20	20	20	21	9	17	16	300	
Scarlet Fever	10	99	32	7	6	2			17	4	6	5	6	10	14		2	7	6	14	24	4	5	9	12		156	
Typhus Fever																												
Influenza	3	2			10	19	29		8	7	10	3	3	4	3		12	5	4	3	10	1	3	8	10	1	90	
Whooping Cough	84	135	5						17	34	4	9	13	17	9	5	12	8	7	4	4	5	4	13	13	22	1	221
Diphtheria, Membranous Group	13	54	9	3	1	2	3		10	7	5	2	4	6	4	1	2	5	4	5	5	1	3	2	6	2	85	
Erysipelas	2	2																1									4	
Enteric Fever		3	3	5	38	47	8		7	8	1	5	8	11	6	12		6	2	3	12	9	4	6	3	2	111	
Asiatic Cholera																												
Diarrhea, Dysentery	342	72	2		1	4	10	15	33	19	9	20	41	10	31	3	12	12	13	16	44	24	60	27	37	3	416	
Epidemic or Zymotic Enteritis	292	50			1	1	2		10	12	9	15	16	50	42	4	17	15	2	32	16	30	33	6	21	1	346	
Enteritis	154	34	3		1	5	6	3	11	10	8	8	12	15	15	7	6	8	4	11	25	11	15	6	18	1	206	
Other Continued Fevers	2	4	1				1			1	1					1			2						1	1	8	
Zoogenous Diseases																												
Veneral Diseases	41	1			1	3	5		7	2	4	1	3		2	1	1		2	5	5	1	3	1	2	10	53	
Erysipelas	6					3	4	10	2	2	2	1	1	2	2		1	1	1	1	1	1	1	5	1	3	23	
Puerperal Fever					9	19																					28	
Other Septic Diseases	6	4	2		3	6	11	6	3	4	1	1	2	1	2			2	2	2	4	3	1	3	4	2	38	
Malarial Fever	1	3	6			6													2	3							2	
Rheumatic Fever		3	6		5	6	4	2	1	5	2		2	1	1	1		2	2	3		4		3	2		29	
Parasitic Diseases																											2	
Tuberculosis of Meninges	23	48	7	5	3	2				7	8	3	1	4	2	3	3	3	3	4	8	2	7	9	6	1	88	
Tuberculosis of Lungs	4	14	9	6	121	154	269	26	9	64	50	53	54	49	77	16	31	56	33	49	64	42	50	45	41	17	903	
Tuberculosis of Intestines	77	56	6	3	4	4		1	16	13	12	3	3	5	6	2	3	4	3	2	2	6	7	4	7	5	3	83
Tuberculosis (other forms)	25	17	6	2	7	19	4	3	13	4	3	3	3	5	2	3	3	3	3	2	2	7	3	1	5		41	
Alcoholism						28	14	2	2	1		1							1								3	
Lead Poisoning																												
Brass Poisoning																												
Cancer			2	1	3	52	218	119	25	33	1	16	13	16	20	22	8	23	20	31	16	34	11	22	34	20	9	395
Other Constitutional Diseases	4	2	3	3	8	18	38	15	11	7	4	1	2	4	5	2	1	4	5	4	4	11	7	3	8	7	1	91
Premature Birth									41	30	19	10	13	19	6	18		15	24	14	16	27	20	15	27	30	4	349
Debility, Marasmus		28	1						44	30	46	10	22	44	30	47	7	22	33	11	41	29	36	87	26	81	41	68
Other Developmental Diseases	131	36	1						15	18	8	6	11	6	6	14	5	3	4	4	4	14	12	6	8	21	1	162

DEATHS OF PERSONS BELONGING TO BIRMINGHAM DURING THE YEAR ENDING DECEMBER 28TH, 1901—continued.

1901.	AGES.							WARDS.														City.							
	0-1	1-5	5-10	10-15	15-25	25-45	45-65	65 and up.	Rotton Park.	All Saints.	Ladywood.	St. Paul's.	St. George's.	St. Stephen's.	St. Mary's.	St. Bartholomew's.	Market Hall.	St. Thomas.	St. Martin's.	Edgbaston & Harborne.	Deritend.		Bordesley.	Duddeston.	Nechells.	Balsall Heath.	Sailey.	Not located.	
Old Age	167	29	11	1	1	1	17	454	28	22	26	18	18	23	22	7	18	26	32	22	38	12	35	15	29	471			
Convulsions	70	61	11	1	1	1	12	3	15	15	6	3	4	9	7	14	4	9	12	1	15	26	8	18	11	15	197		
Meningitis	4	5	1	1	1	1	1	1	11	15	9	11	15	10	8	5	4	5	7	7	8	14	18	16	5	14	184		
Cerebro-spinal Meningitis.....	1	1	1	1	2	2	1	7	2	1	3	1	1	1	1	1	1	4	1	1	2	1	3	2	1	1	11		
Inflammation and Softening of Brain.....	14	14	4	6	18	94	194	172	39	31	18	19	18	26	12	34	13	21	27	31	28	40	28	30	40	34	516		
Other Diseases of Nervous System	5	6	1	1	3	3	1	1	1	2	1	1	1	1	1	1	3	2	1	1	2	1	1	1	1	1	1		
Diseases of Ear, Eye, and Nose	9	4	13	19	27	124	279	178	40	42	39	23	17	31	29	32	7	33	35	40	39	65	35	42	53	31	20	653	
Heart Diseases	1	2	1	1	1	6	17	30	3	2	5	2	4	1	3	3	1	2	1	4	2	5	3	4	1	4	6	56	
Other Diseases of Circulatory System	223	120	2	1	7	51	291	382	62	81	53	31	70	72	56	69	22	27	50	37	58	97	49	82	54	82	25	1077	
Bronchitis	176	226	19	8	42	148	189	95	55	60	36	21	29	71	50	2	11	43	39	21	41	89	60	66	45	67	27	903	
Pneumonia	1	1	1	1	3	11	10	2	1	3	1	1	1	3	1	1	1	1	2	1	2	3	2	3	2	1	1	28	
Pleurisy	7	11	1	1	2	13	24	3	4	4	4	1	2	6	2	4	1	5	4	4	2	4	5	3	4	1	61		
Other Diseases of Respiratory System.....	23	9	2	1	5	13	10	9	5	3	4	1	3	1	3	5	3	1	6	4	2	6	3	8	4	6	1	71	
Diseases of Stomach	7	6	1	1	1	2	9	15	3	3	2	2	2	1	3	1	2	3	2	1	4	5	2	3	1	2	1	41	
Obstruction of Intestines	1	1	1	1	1	24	63	6	7	6	4	7	7	11	13	6	1	2	7	10	8	9	14	12	15	8	1	94	
Cirrhosis of Liver	29	17	6	5	22	33	39	25	18	15	9	7	6	11	13	9	2	7	2	2	2	11	4	7	8	7	4	179	
Other Diseases of Digestive System	1	1	1	1	1	2	8	4	16	17	15	10	16	13	6	19	3	18	8	9	4	11	9	12	7	6	16		
Dis. of Lymph. System & Ductless Glands	5	6	3	2	10	37	94	42	16	12	2	2	1	1	1	1	1	1	1	3	3	2	4	1	3	3	1	199	
Nephritis and Bright's Disease	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	33		
Other Diseases of Urinary System	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	3	3	
Diseases of Male Genital Organs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	22	
Diseases of Female Genital Organs	1	1	1	1	1	14	4	2	3	3	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	45	
Accidents and Diseases of Parturition	2	2	1	2	3	3	4	1	6	4	1	2	2	2	5	4	1	1	3	1	4	5	2	2	2	2	2	18	
Diseases of Osseous System	9	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	
Diseases of Integumentary System	92	2	15	9	5	31	43	34	12	11	8	8	3	6	4	7	2	2	3	8	11	3	5	12	4	9	9	96	
Accidental Suffocation	2	31	1	1	1	3	2	1	1	1	1	1	1	1	2	21	2	10	10	6	7	12	5	15	7	19	6	177	
Other Accidents	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12	
Homicide	2	1	1	1	3	3	2	4	4	2	1	1	4	3	2	1	1	2	1	1	5	2	3	3	2	5	4	49	
Suicide	16	3	1	1	3	4	13	6	5	5	1	4	2	3	2	1	1	2	2	7	5	2	3	3	2	5	4	47	
Ill-defined Causes																													

NOTE.—Deaths in hospitals, workhouses, and asylums, and deaths in streets or other public places have been referred as far as possible to the wards in which the deceased persons had resided.

TABLE V.—COMPARISON OF PREVALENCE OF SICKNESS AND DEATH FROM INFECTIOUS DISEASES.
(Rates calculated per 1,000 persons on the population estimated to the middle of each year).

Year.	Smallpox.		Scarlet Fever.		Diphtheria, Membranous Croup.		Typhus Fever.		Typhoid Fever.		Puerperal Fever.		Erysipelas.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
*1890	—	—	7·31	0·49	0·69	?	0·00	—	0·66	0·14	0·03	0·00	0·97	0·04
*1891	0·11	0·02	3·42	0·21	0·48	?	—	—	0·93	0·18	0·03	0·01	0·86	0·03
1892	0·06	—	2·94	0·14	1·10	0·21	—	—	0·54	0·08	0·08	0·05	1·18	0·07
1893	2·01	0·14	3·31	0·14	0·79	0·17	0·01	—	1·00	0·19	0·11	0·08	1·75	0·05
1894	4·22	0·35	3·64	0·15	0·83	0·18	—	—	1·04	0·21	0·09	0·04	1·57	0·03
1895	0·20	0·02	6·00	0·27	1·50	0·43	—	—	0·88	0·17	0·05	0·03	1·65	0·04
1896	0·03	0·01	6·65	0·32	2·35	0·58	—	—	0·95	0·21	0·06	0·04	1·54	0·04
1897	—	—	3·81	0·19	1·41	0·32	0·00	0·00	1·06	0·18	0·03	0·02	1·16	0·04
1898	—	—	2·60	0·09	1·36	0·26	—	—	1·25	0·22	0·05	0·03	1·25	0·03
1899	—	—	2·44	0·06	1·40	0·29	—	—	1·52	0·23	0·06	0·03	1·23	0·04
1900	0·00	—	3·98	0·18	1·05	0·15	—	—	1·64	0·35	0·08	0·05	1·31	0·05
1901	—	—	6·35	0·29	1·02	0·16	—	—	1·18	0·21	0·06	0·05	1·39	0·04

* Prior to enlargement of City.

TABLE VI.

NUMBER OF CASES REPORTED UNDER THE INFECTIOUS DISEASE
(NOTIFICATION) ACT, 1889, DURING EACH WEEK OF THE YEAR 1901.

Week.			Small Pox.	Scarlet Fever.	Diphtheria.	Membranous Croup.	Typhus Fever.	Typhoid Fever.	Simple Con- tinued Fever.	Relapsing Fever.	Puerperal Fever.	Cholera.	Erysipelas.	TOTAL.
Number.	Date of ending.													
	1901.													
1	January	5th	...	42	13	1	...	27	...	...	1	...	7	91
2	"	12th	...	57	7	...	...	17	...	...	...	...	21	102
3	"	19th	...	39	6	3	...	17	...	...	...	...	23	88
4	"	26th	...	32	8	1	...	16	...	...	1	...	17	75
5	February	2nd	...	39	5	1	...	26	...	...	...	...	18	89
6	"	9th	...	39	7	1	...	11	...	...	1	...	20	79
7	"	16th	...	37	7	1	...	10	...	...	...	...	14	69
8	"	23rd	...	43	4	1	...	7	...	...	...	...	23	78
9	March	2nd	...	51	8	3	...	12	...	...	...	...	18	92
10	"	9th	...	26	7	...	...	7	...	...	...	...	18	58
11	"	16th	...	26	9	1	...	19	...	...	...	...	10	65
12	"	23rd	...	33	10	2	...	6	...	...	...	...	15	66
13	"	30th	...	32	6	3	...	10	...	...	...	...	26	77
14	April	6th	...	39	3	4	...	9	...	...	...	...	14	69
15	"	13th	...	23	9	1	...	12	...	...	2	...	23	70
16	"	20th	...	32	7	...	...	5	...	...	...	...	14	58
17	"	27th	...	31	12	1	...	7	...	...	...	...	20	71
18	May	4th	...	38	10	1	...	4	...	...	...	...	14	67
19	"	11th	...	28	9	3	...	13	...	...	2	...	14	69
20	"	18th	...	37	11	5	...	16	...	...	...	...	11	80
21	"	25th	...	28	9	3	...	7	...	...	...	...	2	49
22	June	1st	...	55	8	...	...	3	...	...	1	...	11	78
23	"	8th	...	47	13	1	...	6	...	...	1	...	8	76
24	"	15th	...	46	8	1	...	6	...	...	1	...	7	69
25	"	22nd	...	55	9	...	...	7	...	...	...	...	13	84
26	"	29th	...	57	5	...	...	5	...	...	...	...	11	78
27	July	6th	...	52	11	...	...	5	...	...	...	...	12	80
28	"	13th	...	76	8	...	...	4	...	...	1	...	7	96
29	"	20th	...	87	8	...	...	8	...	...	2	...	9	114
30	"	27th	...	55	5	...	...	5	...	...	...	...	5	70
31	August	3rd	...	59	8	...	...	7	...	...	1	...	14	89
32	"	10th	...	66	4	...	...	4	...	...	1	...	8	83
33	"	17th	...	60	15	1	...	8	...	...	1	...	6	91
34	"	24th	...	43	7	...	...	22	...	...	...	...	12	84
35	"	31st	...	58	5	1	...	14	...	...	1	...	11	90
36	September	7th	...	61	11	1	...	32	...	...	2	...	12	119
37	"	14th	...	92	11	...	...	27	...	1	...	...	20	151
38	"	21st	...	101	6	...	...	20	...	...	...	...	15	142
39	"	28th	...	123	7	2	...	10	...	...	...	...	14	156
40	October	5th	...	122	8	...	...	10	...	...	1	...	19	160
41	"	12th	...	109	17	2	...	13	...	...	1	...	11	153
42	"	19th	...	126	10	2	...	10	...	...	3	...	25	176
43	"	26th	...	120	12	1	...	16	...	...	1	...	19	169
44	November	2nd	...	106	19	1	...	18	...	...	...	...	11	155
45	"	9th	...	110	14	...	...	22	...	...	...	...	17	163
46	"	16th	...	102	8	1	...	19	...	...	...	...	14	144
47	"	23rd	...	111	8	3	...	7	...	...	1	...	9	139
48	"	30th	...	112	9	5	...	7	1	...	3	...	19	156
49	December	7th	...	88	15	1	...	18	...	...	1	...	17	140
50	"	14th	...	80	9	1	...	9	...	...	2	...	9	110
51	"	21st	...	98	14	...	...	7	1	...	...	...	9	129
52	"	28th	...	85	12	2	...	8	...	...	...	...	10	117
TOTALS			...	3314	471	62	...	615	2	1	32	...	726	5223

Cases removed to Hospital :—Scarlet Fever, 2,959 ; Typhoid Fever, 229.

TABLE VII.
TEMPERATURE OF THE AIR AND GROUND, RAINFALL, SUNSHINE, AND WIND, IN EACH MONTH OF THE YEAR 1901.
Observed at the Birmingham and Midland Institute Observatory, Edgbaston, by Mr. Alfred Cresswell.

MONTH.	TEMPERATURE OF THE AIR.				TEMPERATURE OF THE GROUND.		HOURS OF SUNSHINE.		RAINFALL IN INCHES.		DAYS ON WHICH RAIN FELL.	MILES OF WIND.		
	Highest in the shade.		Lowest in the shade.		Mean for the Month.		1901.	Above or below the average.*	1901.	Above or below the average.*		1901.	Above or below the average.*	
	1901.	Above or below the previous highest.*	1901.	Above or below the previous lowest.*	1901.	Above or below the average.*								
JANUARY	...	52.9	- 5.1	24.3	+ 13.5	37.0	+ 0.1	30	- 5	1.37	- 0.56	14	9107	- 848
FEBRUARY	...	49.8	- 12.1	19.4	+ 11.4	34.9	- 2.6	26	- 30	1.34	- 0.14	12	6389	- 2905
MARCH	...	55.9	- 8.9	23.0	+ 1.7	38.2	- 1.9	61	- 29	1.76	+ 0.22	16	10449	+ 206
APRIL	...	73.1	- 5.9	33.0	+ 6.0	46.9	+ 1.8	146	+ 35	1.95	+ 0.66	12	—	—
MAY	...	77.2	- 0.4	38.3	+ 7.3	51.7	+ 0.8	185	+ 46	1.11	- 0.91	7	8365	- 766
JUNE	...	75.8	- 7.0	40.0	+ 1.7	56.6	- 1.2	167	+ 16	1.84	- 0.26	13	9095	+ 1268
JULY	...	88.0	+ 1.5	50.7	+ 11.2	63.8	+ 4.0	153	+ 13	3.13	+ 1.05	8	6816	- 1663
AUGUST	...	79.6	- 6.0	45.8	+ 4.6	60.1	+ 1.1	164	+ 30	2.13	- 0.64	11	8871	+ 186
SEPTEMBER	...	70.0	- 12.8	44.8	+ 11.8	56.4	+ 1.0	91	- 24	0.65	- 1.24	7	8006	- 160
OCTOBER	...	64.3	- 5.7	35.1	+ 7.2	48.3	+ 1.1	58	- 14	1.84	- 0.74	14	8705	- 250
NOVEMBER	...	53.6	- 8.0	20.8	- 2.7	40.1	- 3.1	20	- 17	1.23	- 1.05	5	8881	- 479
DECEMBER	...	53.6	- 2.4	21.2	+ 6.7	37.2	- 1.3	44	+ 12	4.29	+ 1.95	17	11157	+ 973

In the fourteen years 1857-1870.

* In the fourteen years 1887-1900.

TABLE VIII.

TEMPERATURE AND RAINFALL IN EACH MONTH AND YEAR FROM 1891 TO 1901.

MONTH.	MEAN TEMPERATURE.											
	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	Average for 14 years 1887-1900	1901
JANUARY ..	34·4	35·2	35·1	36·7	30·6	39·9	33·7	42·2	40·2	38·8	36·9	37·0
FEBRUARY	40·2	37·3	39·2	39·9	27·5	39·1	41·5	38·9	39·8	35·5	37·5	34·9
MARCH ...	38·8	35·6	45·3	42·6	40·4	43·5	42·8	38·1	40·1	37·0	40·1	38·2
APRIL ...	42·4	44·9	49·6	48·5	45·5	47·6	43·5	46·0	45·4	46·8	45·1	46·9
MAY ...	48·4	53·2	54·5	47·1	53·9	52·9	49·8	49·0	49·1	49·7	50·9	51·7
JUNE	57·4	56·5	59·0	55·6	58·0	60·7	58·4	55·7	58·8	57·4	57·8	56·6
JULY ...	58·0	56·8	61·0	59·8	58·5	61·1	61·0	58·8	62·3	63·9	59·8	63·8
AUGUST ...	56·9	59·2	63·2	56·4	59·2	56·8	60·1	57·9	63·6	58·7	59·0	60·1
SEPTEMBER	57·2	54·0	54·8	52·1	59·9	54·4	52·9	58·2	55·4	56·2	55·4	56·4
OCTOBER ...	48·4	44·5	48·8	47·2	44·8	43·3	49·1	51·0	47·7	48·7	47·2	48·3
NOVEMBER	41·3	43·2	39·9	45·1	44·6	38·9	44·6	43·8	46·6	44·2	43·2	40·1
DECEMBER	39·2	34·7	39·5	40·1	38·0	38·1	39·8	44·4	35·7	43·7	38·5	37·2
YEAR ...	46·9	46·3	49·2	47·6	46·7	48·0	48·1	48·7	48·7	48·4	47·6	47·6

MONTH.	TOTAL RAINFALL.											
	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	Average for 14 years 1887-1900	1901
JANUARY ...	1·92	1·98	1·75	1·61	3·92	1·15	1·89	0·83	3·44	3·53	1·93	1·37
FEBRUARY	0·69	1·41	2·56	2·05	0·32	0·56	2·54	1·47	1·99	4·28	1·48	1·34
MARCH ..	1·22	0·85	0·50	1·05	1·91	2·68	3·14	0·63	1·02	0·70	1·54	1·76
APRIL ...	2·13	1·23	0·33	1·62	2·37	1·33	2·02	1·85	2·40	0·92	1·29	1·95
MAY ...	3·38	1·85	2·08	2·01	0·82	0·21	1·20	2·62	2·20	2·09	2·02	1·11
JUNE ...	3·27	2·74	1·08	2·16	0·89	1·91	4·13	1·06	3·28	2·41	2·10	1·84
JULY ...	2·08	2·52	1·64	3·36	3·25	1·25	0·95	1·29	1·10	1·74	2·08	3·13
AUGUST ...	3·56	3·73	2·25	2·12	2·75	1·74	3·81	2·57	1·08	2·89	2·77	2·13
SEPTEMBER	1·63	2·97	1·72	1·70	0·45	4·34	2·48	0·64	2·80	0·80	1·89	0·65
OCTOBER ...	5·36	2·84	2·45	3·48	2·81	2·50	1·31	2·74	2·37	3·08	2·58	1·84
NOVEMBER	2·74	1·79	1·38	2·48	3·41	1·26	1·96	2·51	1·49	2·40	2·28	1·23
DECEMBER	3·16	1·69	3·02	1·88	1·99	3·34	2·78	2·24	1·95	4·25	2·34	4·29
YEAR ...	31·14	25·60	20·76	25·52	24·89	22·27	28·21	20·45	25·12	29·09	24·30	22·64

TABLE IX

SUMMARY OF NUISANCES ABATED AND OTHER WORK DONE DURING THE
4TH QUARTER OF THE YEAR, 1901.(RETURNS MADE BY MR. PARKER, *Inspector of Nuisances.*)

DWELLING HOUSES.

No. of Houses cleansed (walls and ceilings)	...	...	...	2460
„ Houses cleansed (floors, bedding, &c.)	...	...	...	18
„ Houses repaired	...	...	...	2463
„ Houses closed under the Housing of the Working Classes Act	...	...	...	0
„ Houses demolished under the Housing of the Working Classes Act	...	...	...	2
„ Houses put in habitable condition under the Housing of the Working Classes Act	...	...	...	0
„ Houses re-opened on rescinding order under the Housing of the Working Classes Act	...	...	...	2
„ Houses closed under the Public Health Act	...	...	...	110
„ Houses demolished under the Public Health Act	...	...	...	43
„ Houses put in habitable condition under the Public Health Act	...	...	...	105
„ Houses provided with better ventilation	...	...	...	79
„ Cases of overcrowding remedied	...	...	...	59
„ Accumulations of water in cellars removed	...	...	...	315
„ Rain-water Spouts repaired	...	...	...	652

CLOSETS.

No. of Ashpit Privies converted to water closets	...	...	...	718
„ Pan Privies converted to water closets	...	...	...	486
„ Privies and Closets limewashed	...	...	...	785
„ Pan Privies cleansed by Staff	...	...	...	79,261
„ Ash Sheds cleansed by Staff	...	...	...	64,246
„ Water Closets repaired	...	...	...	703
„ Pan Privies repaired	...	...	...	433
„ Ash Sheds repaired	...	...	...	324
„ Additional Water Closets provided	...	...	...	98
„ Additional Ash Tubs provided	...	...	...	868
„ Soilpipes removed from inside houses	...	...	...	12
„ Urinals repaired or reconstructed	...	...	...	161
„ Dry Ashpits filled up	...	...	...	3

DRAINAGE.

No. of Drains relaid or repaired	...	...	...	...	...	439
„ Drains opened and cleansed	...	...	...	...	...	2,665
„ Drains efficiently trapped	...	...	...	...	...	1,765
„ Drains in cellars disconnected from the sewer or abolished	...	...	...	...	...	80
„ Sink Drains disconnected from the sewer	...	...	...	...	...	60
„ Sink Bend Pipes repaired or affixed	...	...	...	...	...	301
„ Premises supplied with additional drains	...	...	...	...	...	75
„ Smoke Tests applied to drains	...	...	...	...	...	86
„ Defects discovered thereby	...	...	...	...	...	254
„ Drains in Stables removed	...	...	...	...	...	8
„ Drain Traps cleansed by the Staff	...	...	...	...	...	159,949
„ Surface Drains cleansed by the Staff	...	...	...	...	...	70,626
„ Drains connected to Sewer	...	...	...	...	...	2

OTHER NUISANCES ABATED AND WORK DONE.

No. of Back Yards paved	...	...	...	...	...	199
„ Back Yards repaired	...	...	...	...	...	413
„ Courts cleansed by Staff	...	...	...	...	...	3,573
„ Wash-houses repaired	...	...	...	...	...	247
„ Premises from which fowls have been removed	...	...	...	...	...	120
„ Nuisances from swine and swine styes abated	...	...	...	...	...	26
„ Accumulations of wash, manure, etc., removed	...	...	...	...	...	638
„ Dangerous Premises reported to the City Surveyor's Department...	...	...	...	...	...	822
„ Defective Water Fittings reported to the Water Department	...	...	...	...	...	982
„ Premises supplied with Corporation Water	...	...	...	...	...	7
„ Disused Wells filled up	...	...	...	...	...	8
„ Manure Receptacles provided or reconstructed	...	...	...	...	...	30
„ Over-flow Pipes disconnected from drains	...	...	...	...	...	22
„ Defective Rainwater Cisterns filled up	...	...	...	...	...	8

DISINFECTION.

No. of Houses disinfected after Smallpox	...	...	...	...	...	0
„ „ „ „ Scarlet Fever	...	...	...	...	...	2,703
„ „ „ „ Diphtheria and Croup	...	...	...	...	...	270
„ „ „ „ Typhoid Fever	...	...	...	...	...	456
„ „ „ „ Puerperal Fever	...	...	...	...	...	21
„ „ „ „ Consumption	...	...	...	...	...	345
„ „ „ „ Measles	...	...	...	...	...	103
„ Beds and Mattresses disinfected	...	...	...	...	...	4,234
„ Sheets, Blankets, and Counterpanes disinfected	...	...	...	...	...	10,046
„ Pillows and Bolsters disinfected	...	...	...	...	...	7,395
„ Garments disinfected	...	...	...	...	...	12,809
„ Carpets disinfected	...	...	...	...	...	559
„ Other Articles disinfected	...	...	...	...	...	1,595

SMOKE NUISANCES.

No. of Observations made by the Inspectors	...	...	...	15,808
„ Manufacturers Reported for breaking the regulations	...	...	...	116

LODGING HOUSES.

No. of Visits by day	...	...	...	...	12,763
„ Visits by night	...	...	...	...	914
„ Persons found occupying the houses	...	...	...	...	18,912
„ Keepers summoned	...	...	...	...	14

CANAL BOATS

No. of Boats registered	...	...	...	...	13
„ Boats inspected	...	...	...	...	850
„ Contraventions remedied	...	...	...	...	81

WORKSHOPS.

No. of Visits to Workshops	...	...	...	...	10,637
„ Workshops limewashed	...	...	...	...	1,382
„ Sanitary defects remedied	...	...	...	...	1,367

DAIRIES, COW SHEDS, AND MILK SHOPS.

No. of Visits to Dairies	...	...	...	...	503
„ Visits to Cow Sheds	...	...	...	...	724
„ Visits to Milk Shops and Milk Stores	...	...	...	...	11,578
„ Contraventions remedied	...	...	...	...	1,998
„ Dirty Churns found at Railway Stations	...	...	...	...	175

BAKEHOUSES.

No. of Visits to Bakehouses	...	...	...	...	1,154
„ Bakehouses limewashed	...	...	...	...	190
„ Sanitary Defects remedied	...	...	...	...	3

UNWHOLESOME FOOD.

(Return made by MR. EDWARDS, Superintendent of the Markets.)

Voluntary Surrenders of Bad Meat	...	...	...	...	2,487
Seizures of Bad Meat	...	...	...	...	20
Weight destroyed	...	...	...	...	247 tons
Voluntary Surrenders of Bad Fish, etc.	...	...	...	...	623
Seizures of Bad Fish, etc.	...	...	...	...	11
Weight destroyed	...	...	...	...	70 tons
Weight of Bad Fruit, etc., destroyed	...	...	...	...	24 tons

CONTAGIOUS DISEASES (ANIMALS) ACT.

(Return made by MR. EDWARDS, Superintendent of the Markets.)

No. of Visits to Slaughter Houses	...	...	...	...	10,289
„ „ Railway Stations	...	...	...	...	1,155
„ „ Cow Houses	...	...	...	...	29

RETURN FOR THE PERIOD 1ST JULY, 1900, TO 30TH JUNE, 1901, RESPECTING THE VACCINATION OF CHILDREN WHOSE BIRTHS WERE REGISTERED IN THE CITY DURING THE SAID PERIOD.

TABLE X.

Number of Births returned in the "Birth List Sheets" as Registered.	Number of these Births duly entered in Columns I., II., IV., and V. of the "Vaccination Register" (Birth List Sheets), viz. :					Number of these Births which remained unentered in the "Vaccination Register" on account (as shown by Report Book) of				Number of these Births remaining neither duly entered in the "Vaccination Register" (cols. 3, 4, 5, 6 and 7 of this Return) nor temporarily accounted for in the "Report Book" (cols. 8, 9, and 10 of this Return).
	Col. I.	Col. II.		Col. IV.	Col. V.	Postponement by Medical Certificate.	Removal to Districts the Vaccination Officer of which has been duly appraised.	Removal to places unknown or which cannot be reached; and cases not having been found.		
		"Success-fully Vac- ci- rated."	"Insus-ceptible of Vac- ci- na- tion."						"Had Smallpox."		"Number in respect of whom Certificates of conscientious objection have been received."	"Dead, Unvac- ci- nated."
¹ Birmingham Parish ...	³ 5,288	⁴ 27	⁵ —	⁶ 27	⁷ 1,198	⁸ 116	⁹ 97	¹⁰ 876	¹¹ 245	
Aston Union (within the City) ...	4,806	28	—	33	961	109	141	447	372	
King's Norton Union (within the City) ...	1,346	11	—	14	150	31	30	86	34	
Total ...	11,440	66	—	74	2,309	256	268	1,409	651	

WELL WATERS.

Jan. 4th	105 and 106 Vincent Street (1st sample)	...	326.0	...	.018	.001	16.50	.32	165,000	24.0	...	175.0	Slightly turbid; pale green.
" 4th	Woodhouse Lands, Tennal Road (1st sample)	...	31.0	...	.007	.034	0.00	.26	—	2.9	...	14.5	Very turbid; green.
" 14th	105 and 106 Vincent Street (2nd sample)	...	327.0	...	.022	.000	17.60	.26	176,000	26.4	...	182.0	Very lightly turbid; green.
Feb. 20th	Woodhouse Lands, Tennal Road (2nd sample)	...	30.0	...	.005	.001	0.45	.15	4,200	3.0	...	16.0	Very slightly turbid; greenish grey.
Mar. 6th	2, 3 and 4 George Street, Balsall Heath	...	174.0	...	.004	.003	4.60	.05	46,000	12.8	...	133.0	Turbid; grey
June 28th	Pebble Mill Farm, Pershore Road	...	135.0	...	.010	.000	4.10	.26	41,000	9.3	...	75.0	Turbid; greyish green
" 28th	131 Varna Road	...	135.0	...	.013	.160	1.90	.16	19,000	8.1	...	75.0	Very slightly turbid; pale green.
July 25th	Pear Tree Cottage, York Street, Harborne	...	76.0	...	.021	.060	8.00	...	80,000	5.9	...	36.0	Turbid; greenish grey
Sept. 11th	22 to 28 Homer Street	...	65.0	...	.003	.000	2.10	.07	21,000	5.0	...	42.0	Very slightly turbid; greenish grey.
Oct. 18th	182 Aston Road, (1st sample)	...	122.0	...	.011	.015	3.50	.05	35,000	16.0	...	62.0	Rather turbid; pale green.
Dec. 6th	" 2nd "	...	113.0	...	.004	.004	4.20	.05	42,000	14.3	...	55.0	Very slightly turbid; greenish grey.
Oct. 30th	Woodhouse Lands, Tennal Rd.	...	27.2	...	.018	.048	0.35	.30	3,600	3.0	...	17.0	Very turbid; grey.

TABLE XII.

Number of Deaths in each Street in the City of Birmingham during the Year 1901.

STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.
A			Balfour Street	2	1	Brickilm Street		
A B Row	2	3	Balsall Heath Road ...	1	29	Bridge Road		5
Abberley Street			Banbury Street	1	1	Bridge Street		
Abbey Road		7	Banks Road		3	Bridge Street West	4	30
Abbey Street			Barford Road	2	9	Brighton Road		10
Abbotsford Road	1		Barford Street	12	34	Bristol Road		14
Aberdeen Street	3	19	Barker Street	2	5	Bristol Street	2	13
Ada Street		6	Barlow's Road			Brixham Road		1
Adams Street	5	33	Barn Street	2	6	Broad Street	2	14
Adderley Road	2	18	Barnsley Road		1	Bromford Lane		
Adderley Street		4	Barr Street	3	24	Bromley Street	1	8
Addison Road		2	Barraek Street		2	Bromsgrove Street	3	9
Adelaide Street		6	Barrows Road		10	Brook Road		
Albany Road		2	Bartholomew Row		1	Brook Street		
Albert Road		1	Bartholomew Street	12	8	Brookfield Road	5	11
Albert Street			Barwell Road	12		Broom Street		3
Albion Street		1	Barwick Street			Browning Street	1	14
Alester Street	1	19	Bath Passage		1	Brueton Street		
Alder Drive			Bath Row		8	Brunswick Road	5	22
Alder Road		2	Bath Street	4	12	Bryant Street	1	2
Alexandra Road		4	Beach Street	2	16	Buck Street		9
Alexandra Street	2	6	Beaconsfield Road			Buckingham Street	1	8
Alfred Street	1	6	Beak Street	1	6	Bull Ring	1	5
Algernon Road	1	2	Beaufort Road		3	Bull Street, Harborne ..		1
Allcock Street	3	9	Bedford Road	1	2	Bull Street, Market Hall		
Allen's Road		1	Beech Lanes		1	Bullock Street	1	4
Allesley Street	3	11	Beechfield Road	1	4	Burbury Street	1	8
Allison Street	7	20	Belchers Lane			Burlington Road	1	3
All Saints' Road		2	Belgrave Road	8	22	Burney Lane		
All Saints' Street		1	Bellbarn Road	10	46	Butler Street	1	3
Alma Crescent	1	10	Bellefield Road	1	2	Butler Street South		3
Alma Street		1	Bell Street			Butlin Street		3
Alston Street		6	Bellis Street		3	Byron Road		8
Alum Rock Road	1	18	Belmont Passage	1	3	C		
Ampton Road			Belmont Row	2	7	Calthorpe Road		3
Anderton Road	1	8	Benacre Street	2	21	Cambridge Crescent		1
Anderton Street		10	Bennett's Hill		1	Cambridge Street		1
Anderton Park Road ..			Bennett's Road	2	6	Camden Drive		
Andover Street			Benson Road	2	8	Camden Grove	1	6
Angelina Street	12	23	Berkley Street		2	Camden Street	11	47
Annandale Road			Berners Street	2	4	Camp Hill	1	7
Anthony Road		3	Berry Street		1	Camp Street	2	2
Arden Road	2	10	Berry Road	1	6	Canal Street	1	4
Argyle Street	3	13	Bertram Road		2	Cannon Hill		1
Arley Road	2	12	Betholom Row			Cannon Hill Road		2
Armoury Road		4	Birchall Street	1	6	Cape Street	1	3
Arsenal Street		1	Birchwood Crescent			Cardigan Street	7	13
Arter Street	1	2	Birchwood Road		4	Carlisle Street	4	7
Arthur Place		1	Bishop Street	2	26	Carlton Road	1	5
Arthur Road			Bishopsgate Street	5	20	Carlyle Road		4
Arthur Street	9	42	Bissell Street	3	16	Carnarvon Road		
Artillery Street	1	1	Blackford Street	1	3	Caroline Street	3	1
Ash Road		12	Black Pit Lane			Carpenter Road		1
Ashbourne Road		4	Blake Lane		5	Carrington Road		8
Ashfield Road			Blakeland Street	4	5	Carrs Lane		
Ashford Street	1	8	Blews Street	9	9	Cartland Road		3
Ashley Street	3	21	Bloomsbury Street	2	44	Carver Street	1	19
Ashted Row		15	Blucher Street	2	15	Castle Street		1
Aston Road	3	23	Blythe Street		13	Cathcart Street	2	5
Aston Street	1	10	Bolton Road	10	40	Cato Street	3	17
Aston Brook Street	3	9	Bolton Street	1	2	Cato Street North	2	4
Aston Church Road	1	9	Bond Street			Cattell Road	5	20
Asylum Road	3	5	Bordesley Green	2	25	Cattell's Grove	1	5
Athole Street		1	Bordesley Street	3	21	Cavendish Road		2
Atlas Road			Bordesley Green Road ..		5	Cecil Street	2	21
Auckland Road	3	6	Bordesley Park Road ..	8	21	Cemetery Lane		1
Augusta Street		2	Bow Street	3	8	Chad Road		1
Augustus Road		3	Bowyer Road	1	4	Chandos Road		
Austin Street	1	6	Bowyer Street		1	Chapel Street		7
Avenue Road			Bracebridge Street	5	15	Chapel House Street		3
Avery Road		2	Bradford Street	6	22	Chapman Road		3
B			Braithwaite Road		6	Charles Road	4	17
Bacchus Road	1	6	Branston Street	2	8	Charles Arthur Street ..	8	12
Bagot Street	2	13	Brass Street	1	3	Charles Henry Street ..	9	34
Bailey Street			Brasshouse Passage			Charlotte Road		2
Baker Street	4	6	Brearley Street	13	46	Charlotte Street	2	6
Balden Road		1	Brewery Street	1	8	Chartist Road	1	1

NOTE.—Deaths in hospitals, workhouses, asylums, and other public places have been referred as far as possible to the streets in which the deceased persons had resided.

STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.
Chattaway Street	2	7	Dallwood Road			Fawdry Street		2
Cheapside	6	30	Dalton Street		1	Fazeley Street	1	17
Cheatham Street			Darnley Road		1	Fellows Lane		
Chequers Walk		6	Dart Street			Finsbury Road		
Cherry Street			Dartmouth Street	4	24	Fisher Street		5
Cherrywood Road	3	18	Darwin Street	7	27	Floodgate Street	5	13
Chester Street	1	5	Dawson Street		3	Florence Street		5
Chesterton Road		5	Dean Street		7	Floyer Road		
Cheston Road		2	Dearman Road			Ford Street		17
Chicheley Street	1	1	Defford Road	1		Fordrough Lane		
Chiswell Road	1	4	Denbigh Street		5	Forster Street	1	4
Church Road		2	Dennis Road		1	Foundry Road	2	9
Church Street			Derby Street	2	5	Fountain Road		
City Road		7	Devon Street	4	25	Fowler Street	1	1
Claremont Road		3	Devonshire Street	6	17	Fox Street		8
Clarence Road	1	5	Digbeth	1	10	Francis Road		6
Clarendon Road		2	Digby Street	1	7	Francis Street	7	19
Clark Street	2	13	Dixon Road		1	Frank Street	1	9
Claverdon Street	3	8	Doe Street	1	2	Frankfort Street	4	13
Claybrook Street	1	1	Dolman Street	3	12	Franklin Street	1	3
Clayton Road		5	Dolobran Road	2	11	Frederick Road		3
Clement Street	1	7	Don Street	2	10	Frederick Street		4
Cleve Terrace			Dora Road		3	Freeman Road	1	11
Clevedon Road	2	7	Doris Road	1	1	Freemant Street		1
Clifton Road	2	22	Dorset Road			Freeth Street	1	19
Clinton Street		1	Dover Street			Friston Street		18
Clissold Street		6	Drayton Road	2				
Cleveland Street	1	7	Drew's Lane			G		
Clodeshall Road	3	4	Drury Lane		2	Galton Street	1	5
Clyde Street		2	Dryden Road			Garbett Street	9	13
Coleman Street		16	Duchess Road		2	Garrison Lane	11	38
Coleshill Street	8	19	Duddleston Row	2	9	Garrison Street	5	20
College Road		7	Duddleston Mill Road	4	28	Gas Street		
College Street	3	7	Dudley Road		16	Gate Street		6
Colmore Row		1	Dudley Street			Geach Street	4	10
Colville Road	2	5	Dugdale Street	3	7	Gee Street	1	2
Commercial Street		1	Duke Street	1	11	Gem Street	1	6
Common Lane			Dymoke Street	3	17	George Road		1
Communication Row	2	9				George Arthur Road		4
Congreve Street			E			George St., Balsall H'ld.		9
Constance Road			Earl Street			George Street, St. Paul's	2	4
Constitution Hill	2	2	Eastern Road			George Street West	8	15
Conway Road			Easy Row		2	Gibb Street		2
Conybere Street		20	Edgbaston Road		2	Gillhurst Lane		
Cook Street	1	9	Edgbaston Street			Gillott Road	2	12
Cooksey Road	4	33	Edgbaston Park Road		1	Gladstone Road		5
Cope Street	3	8	Edmond Road		1	Glebe Street		8
Coplow Street	2	13	Edmund Street		2	Gloucester Street		
Coralie Street		7	Edward Road	2	21	Glover Street	7	18
Cornwall Street		3	Edward Street	3	27	Glover's Road		3
Coronation Road			Eldon Road		1	Godwin Street		7
Corporation Street			Eliot Street		3	Golden Hillock Road	2	7
Cotterill's Lane			Elkington Street	1	5	Gooch Street	3	32
Couchman Road		2	Ellen Street	2	25	Goode Street		6
Court Road		2	Ellis Street	2	5	Goodrick Street	1	8
Court Oak Road			Elm Tree Road			Gopsall Street	1	4
Coventry Road	7	37	Elvetham Road		3	Gordon Road		5
Coventry Street	1	12	Emerson Road			Gordon Street	2	3
Cowper Street	6	20	Emily Street	8	22	Gosford Street		1
Cox Street	2	3	Emmeline Street			Gosta Green		3
Cox Street West	1	4	Enfield Road			Gough Road	1	4
Coxwell Road		5	Erasmus Road	1	9	Gough Street		3
Crabtree Road	5	6	Ernest Street			Grace Road		12
Cradock Road	3	6	Ernest Road			Grafton Road		3
Cranbury Street	1	3	Erskine Street		6	Graham Street	2	6
Cranby Street	2	6	Essex Street	1	6	Grange Road	2	10
Cranmore Street		6	Essington Street	1	17	Grant Street	2	3
Crawford Street		3	Ethel Road		1	Grantham Road	2	4
Cregoe Street	2	16	Ethel Street			Granville Street	1	12
Crescent		8	Eton Road		2	Gray Street	1	4
Cromer Road		2	Eva Road	1	7	Gray's Road		
Crompton Road		1	Eversley Road	4	22	Great Barr Street	3	14
Cromwell Street	11	54	Exeter Street			Great Brook Street	5	35
Crosbee Road			Eyre Street	1	10	Great Charles Street		5
Cuckoo Road	4	15	F			Great Colmore Street	8	46
Cumberland Street	1	4	Factory Road	1	3	Great Francis Street	8	36
Curzon Street	2	8	Falconer Road	1	1	Great Hampton Row	5	16
Cuthbert Road	2	9	Fallows Road	3	7	Great Hampton Street	2	7
Cyril Road		2	Farm Road	1	2	Great King Street	2	18
			Farm Street	25	52	Great Lister Street	3	26
D			Farquhar Road		2	Great Russell Street	12	38
Daisy Road		2	Farquhar Road East			Great Tindal Street	1	14
Dale End	3					Green Lane	4	36

STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.
Green Street, Deritend	2	3	Holliday Street	1	7	Latimer Street	4	30
Green Street, Saitley	12	1	Hollier Street	1	7	Lawden Road		6
Greenfield Crescent		1	Holloway Head	2	10	Lawford Street	2	7
Greenfield Road		4	Holly Road		1	Lawley Street	10	23
Greenway Street	3	20	Holt Street	2	16	Lawrence Street	1	5
Grosvenor Road			Homer Street		4	Lawson Street		
Grosvenor Street		1	Hooper Street		2	Laxey Road		3
Grosvenor Street West	4	17	Hope Street	5	27	Leach Street	1	4
Grove Lane			Horse Fair	1	1	Leamington Road	4	12
Grove Street			Hospital Street	24	43	Lease Lane		2
Guest Street		4	Howard Street		4	Ledsam Street	1	15
Guildford Street	3	13	Howe Street		16	Lee Bank Road	6	24
Guthrie Street			Hubert Street		2	Lee Crescent		1
H			Hugh Road	1	7	Lee Mount		3
Hack Street		1	Humpage Road	1	9	Leek Street	2	5
Haden Street	2	2	Hunter's Road			Lees Street		8
Hadley Street		1	Hunter's Vale		2	Legge Lane		1
Hagley Road	1	9	Hurst Street	12		Legge Street	1	7
Halberton Street	1	8	Hutton Road		3	Leigh Road		
Hall Road		2	Hyde Road		6	Lench Street		
Hall Street		4	Hylton Street			Lennox Street	4	15
Hallam Street	2	9	I			Leonard Street	1	3
Hampden Street		5	Icknield Square	3	14	Leopold Street	3	12
Hampton Street		13	Icknield Street	4	25	Leslie Road		
Hams Road			Icknield Port Road	6	40	Lime Grove		
Handsworth New Road		5	Inge Street	1	7	Lincoln Street	1	6
Hanley Street		7	Ingleby Street	2	8	Lingard Street	2	8
Hanover Street	2	2	Inkerman Street	3	19	Link Road		1
Harborne Road		5	Irving Street	5	39	Lionel Street		5
Harborne Park Road	1	2	Islington Row	1	4	Lister Street		4
Harding Street	1	5	Ivy Lane	1	1	Little Ann Street		8
Harford Street		5	J			Little Barr Street	2	3
Harold Road		1	Jakeman Road	1	4	Little Bow Street		1
Harris Road			Jakeman Walk	1	3	Little Broom Street		4
Harrison's Road		2	Jamaica Row			Little Edward Street	1	1
Hart's Road			James Street			Little Francis Street		1
Hartop Road	2	7	James Turner Street		4	Little Green Lane	9	18
Hatchett Street	5	14	James Watt Street	1		Little King Street		7
Havelock Road	3	13	Jenkins Street		5	Little Shadwell Street		3
Hawkes Street	1	11	Jennens Row	1	5	Liverpool Street		2
Hawthorn Road		1	Jersey Road		1	Livery Street		
Heath Street	6	38	John Bright Street		1	Lloyd Street		
Heath Street South		4	Johnson Street		7	Lodge Road	3	22
Heath Green Road		1	Johnstone Street		7	Lombard Street	2	3
Heath Mill Lane	4	12	K			Long Acre	6	29
Heaton Street	6	15	Keelcy Street			Long Street	1	8
Helena Street			Kendal Road			Longbridge Road		4
Heneage Street	20	41	Kenelm Road	1	7	Longmore Street	3	6
Henley Street	1	4	Kent Street	10		Lonsdale Road		
Henn's Walk		1	Kent Street North		9	Lord Street	3	8
Henrietta Street			Kenyon Street	1	8	Lordswood Road		4
Henry Street	1	15	Key Hill		9	Louisa Street		2
Henshaw Road		4	King Street			Love Lane		4
Herbert Road	4	35	King Alfred's Place			Loveday Street	1	4
Hermitage Road			King Edward's Place			Low Street		5
Herrick Road	1	4	Kingscote Road	3	21	Lower Dartmouth Street	1	4
Hertford Road		4	Kingsley Road		2	Lower Darwin Street	1	6
Hick Square	1		Kingswood Road		5	Lower Essex Street	4	14
Hick Street		8	Kirby Road	2		Lower Loveday Street		3
Hickman Road	4	6	Kitchener Street	1	4	Lower Priory		
High Street			Knutsford Street		3	Lower Temple Street		
High Street, Bordesley, and Deritend	5	51	Kyott's Lake Road	2	4	Lower Tower Street	7	32
High Street, Harborne	1	14	Kyrwick's Lane		12	Lower Trinity Street		8
High Street, Saitley		11	L			Loxton Street	2	1
Highfield Rd., Edgbton			Ladypool Road	1	20	Ludgate Hill		3
Highfield Road, Saitley		17	Ladywell Passage		2	Lupin Street	7	7
Highgate Place		2	Ladywell Walk		3	Lyttelton Road		
Highgate Road	6	35	Ladywood Road	2	25	M		
Highgate Square			Lancaster Street	1	25	Macdonald Street	2	8
Highgate Street	11	15	Langley Road	2	8	Magdala Street		1
High Park Street	3	7	Lansdowne Street	1	4	Main Street	3	4
Hill Street		6	Larches Street	2	11	Malins Road		
Hinckley Street						Malmesbury Road	3	11
Hingston Street	2	21				Malthouse Lane	2	10
Hobmoor Road	2	1				Malvern Street		10
Hockley Hill	4	6				Malvern Hill Road	1	12
Hockley Street	1	5				Manchester Street	3	12
Holborn Hill	4	8				Manor Road		1
Holder Road		1				Mansell Road		
Holland Street		6				Margaret Road		1
						Margaret Street		
						Mark Lane	1	

STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.
Markby Road	2	6	Noel Road			Potter Street		2
Market Street			Norfolk Road			Powell Street	2	5
Marlborough Road			Norman Street	1	6	Prescott Street	3	17
Marroway Street	2	5	North Road	1	2	Preston Road	5	5
Marshall Street		7	Northampton Street	1		Price Street		9
Marshall Street South	1	7	Northbrook Street		3	Priestley Road		5
Martineau Street			Northfield Road		4	Prince Albert Street	2	5
Mary St., Balsall Heath		29	Northumberland Street	1	4	Prince Arthur Road		
Mary Street, St. Paul's			North Warwick Street			Princes Row	2	2
Mary Ann Street		2	Northwood Street	3	18	Princes Street		3
Masshouse Lane		1	Norton Street	1	10	Princess Road		5
Maxstoke Street	1	1	Norwood Road		1	Princip Street	1	9
Meadow Road			Nova Scotia Street	2	3	Priory Road		
Medlicott Road	1	2	Nursery Road		3	Pritchatt's Road		
Melville Road		1				Pritchett Street	10	36
Membury Road			O			Proctor Street	5	8
Meriden Street	5	10	Oakfield Road		7	Prospect Row		1
Metchley Lane	1	12	Oakley Road		2			
Metchley Park Road			Old Square		1	Q		
Metropolitan Road			Old Church Road		1	Queen Street		6
Midland Street	1	4	Old Cross Street		1	Queen's Park Road		
Miles Street	2	16	Oldfield Road	3	15			
Milk Street	6	17	Old Meeting Street		1	R		
Mill Lane		7	Oliver Road		1	Radnor Street	1	2
Mill Street		3	Oliver Street	3	6	Raglan Road		
Miller Street	3	15	Ombersley Road	1	11	Railway Terrace	4	10
Milton Street	2	4	Oozells Street	1	1	Ralph Road		
Milward Street	2	3	Oozells Street North		1	Rann Street		16
Moat Lane			Orchard Road	2	1	Ravenhurst Road		8
Moat Row			Orford Road		4	Ravenhurst Street	2	10
Moilliett Street	2	11	Ormond Street		10	Rawlins Street	2	4
Moland Street	13	46	Osborn Road		3	Raymond Road	1	5
Mole Street	3	12	Osler Street	4	14	Rea Street	6	25
Mona Road	1	5	Oughton Place		4	Rea Street South	2	1
Montague Road		2	Owen Street	1	7	Redhouse Road		
Montague Street		2	Oxford Street	3	12	Regent Parade		
Montgomery Street	1	6	Oxygen Street	1	6	Regent Place	1	3
Montpellier Street		1				Regent Road	1	1
Monument Road	7	27	P			Regent Row	1	6
Moor Street		20	Paddington Street	5	9	Regent Street		1
Moore's Row		4	Paignton Road		2	Regent Park Road		5
Moorsom Street	11	13	Pakenham Road		2	Reginald Road	2	14
Moreton Street		5	Palace Road		6	Reservoir Retreat		2
Morville Street	3	17	Palmer Street	2	9	Reservoir Road		4
Moseley Road	2	32	Palmerston Road	1	1	Richard Street	6	16
Moseley Street	7	25	Parade		3	Richmond Hill Road		
Mostyn Road			Paradise Street			Ridley Street	1	1
Mott Street	2	12	Park Lane		2	River St., Balsall Heath	2	9
Mott Street			Park Road	12	37	River St., St. Bartholomew's		4
Mount Pleasant	1	8	Park Street	2	19	Robert Road	1	4
Mount Street	5	10	Parkfield Road		5	Rocky Lane	2	11
Muntz Street	1	10	Park Hill Road	1	4	Rodway Street		2
Musgrave Road		6	Parker Street		6	Ronald Road	1	4
Myddleton Street		2	Parliament Street	2	8	Rosalie Street		3
N			Paxton Road		2	Rose Road		
Nansen Road			Pearson Street	1	1	Rosebery Street		12
Navigation Street		7	Pebble Mill Road			Roshven Road		3
Nechells Place		3	Peel Street	3	16	Rotton Park Road		11
Nechells Park Road	3	33	Pemberton Street			Rotton Park Street		
Needham Street			Pembroke Road			Rowland Street	1	1
Needless Alley			Penn Street	1	1	Runcorn Road		5
Nelson Street	6	16	Percival Road			Rupert Street	3	27
New Road		1	Perrot Street	1	6	Rushbury Road		
New Street		2	Pershore Road		10	Russell Street		
New Bartholomew Street		4	Pershore Street	2	22	Ruston Street		24
New Bond Street		1	Phillimore Road	2	8	Rutland Road	1	2
New Canal Street	2	17	Phillip Street			Ryder Street		2
Newdegate Street		3	Pickford Street	3	4	Ryland Road		3
Newhall Hill		3	Piddock Street		1	Ryland Street	4	10
Newhall Street	2	23	Pigott Street	3	9			
New John Street	10	28	Pitney Street			S		
New John Street West	9	47	Pitsford Street	3		St. Andrew's Road	7	18
New Market Street			Pitt Street			St. Augustine's Road		1
New Meeting Street			Plough and Harrow Road	1		St. Clement's Road	2	9
Newport Road		5	Plume Street			St. George's Place	1	4
New Spring Street	4	18	Pope Street	4	13	St. George's Street	6	23
New Summer Street	7	37	Poplar Avenue		1	St. James' Place	2	6
Newton Street		1	Poplar Road		2	St. James' Road		
Newtown Row	8	25	Porchester Street	4		St. James' Street	1	8
Nigel Road	1	1	Porthope Road	2		St. John's Road		
Nile Street			Portland Road	1		St. Luke's Road	1	15
Nineveh Road								

STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases.	Other Diseases.
St. Margaret's Road	1	2	Station Avenue		3	Upper Mill Lane		
St. Mark's Street	3	27	Station Road	1	3	Upper Priory		
St. Martin's Lane		2	Station Street		2	Upper Ryland Road	1	8
St. Martin's Place			Stechford Lane			Upper Trinity Street	4	7
St. Martin's Row			Steelhouse Lane	1	11			
St. Martin's Street		12	Stella Street		4	V		
St. Mary's Road		1	Stephenson Place			Varna Road		5
St. Mary's Row		4	Stephenson Street		2	Vaughton Street	6	18
St. Mary's Street		1	Steward Street	5	17	Vaughton Street South		1
St. Oswald's Road		3	Stirling Road		2	Vauxhall Grove		1
St. Paul's Road	3	5	Stoke Street	1	11	Vauxhall Road	6	17
St. Paul's Square			Stone Yard			Vauxhall Street		3
St. Peter's Place			Stoney Lane	2	14	Venetia Road		2
St. Peter's Road		2	Stour Street	5	16	Ventnor Road		3
St. Saviour's Road		11	Stratford Place		6	Vere Street		5
St. Stephen's Street	1	1	Stratford Road		11	Vernon Road		
St. Vincent Street	1	21	Stratford Street		4	Vicarage Rd., Edgbaston		3
Salisbury Road		1	Strensham Road			Vicarage Rd., Harborne		1
Salop Street		9	Stuart Street		6	Victor Road		1
Saltley Road	3	16	Studley Street	3	5	Victoria Grove		
Saltley Street	2	3	Suffolk Street		5	Victoria Road		1
Sampson Road		2	Summer Lane	9	56	Victoria Street	3	3
Sampson Road North	2	5	Summer Road		17	Villa Street		1
Sand Pits		1	Summer Row		3	Villiers Street		3
Sand Street		1	Summerfield Crescent		7	Vincent Crescent		4
Sandon Road	1	1	Summerfield Road		1	Vincent Parade		7
Sandy Lane	4	12	Summer Hill Road			Vincent Street	1	13
Sarah Street			Summer Hill Street	2	11	Vine Street		2
Scholefield Street	4	14	Summer Hill Terrace	1	2	Vittoria Street	2	1
Scotland Street		1	Sun Street		12	Vivian Road	1	6
Scott Street		2	Sun Street West	1	2	Vyse Street		1
Sefton Road		2	Sutton Street	1	2			
Selly Park Road			Swallow Street		2			
Selwyn Road		2	Sydenham Road	5	14			
Serpentine Road		4	Sydney Road	1	1			
Seyn Street	1	6						
Seymour St., B'sall H'th		3						
Seymour St., St. Barth.								
Shadwell Street		2	T					
Shakespeare Road	1	6	Talbot Street	2	10	Walford Road	3	6
Sheep Street	2	7	Talfourd Street	2	17	Walter Street	1	7
Sheepcote Lane	1	5	Tarry Road	1	2	War Lane		
Sheepcote Street	1	12	Taunton Road	1	4	Ward End		
Shelford Road		5	Taylor Street		4	Ward Street	5	6
Shenstone Road	5	4	Teall Road		4	Warner Street	1	7
Sherborne Street	1	34	Temple Row			Warren Road		1
Sherbourne Road	2	22	Temple Row West			Warstone Lane	3	18
Sherlock Street	2	28	Temple Street			Warstone Parade East		
Sir Harry's Road			Templefield Street	2	6	Warwick Street	2	11
Skinner Lane	2	10	Tenby Street		4	Washington Street	1	5
Skinner Street		4	Tenby Street North		2	Washwood Heath Road	3	13
Sladefield Lane			Tennal Road		2	Water Street		4
Slaney Street		2	Tennal Lane			Waterloo Street		
Stoane Street	3	9	Tennant Street	2	11	Waterworks Road	1	9
Smallbrook Street	1	5	Tennyson Road	1	2	Watery Lane	5	23
Smith Street	5	14	Theodore Street		7	Watts Road		
Smithfield Passage		3	Theresa Road		4	Wavell Road		2
Smithfield Street			Thimble Mill Lane	6	7	Waverley Road	1	1
Snow Hill	1	4	Thomas Street	1	3	Weaman Street	2	16
Somerset Road			Thorp Street		2	Well Lane		
Somerset Street	1	3	Tibbitts Lane			Well Street		22
Somerville Road	1	7	Tillingham Street		4	Wellesley Street	5	3
South Road	1	6	Tilton Road	9	18	Wellington Road		1
South Street	2	2	Tindal Street	1	5	Wellington Street	4	18
Southfield Road	1	2	Tower Street	9	26	Wenman Street		16
Spark Street		3	Trafalgar Road			Wentworth Road		1
Speaking Stile Walk			Treaford Lane			Westbourne Road		1
Speedwell Road			Trent Street	1	4	Western Road		1
Spencer Street	1	7	Trevor Street	3	14	Westfield Road		
Spiceal Street			Trinity Terrace		1	West Henth Road		
Spon Terrace			Turnor Street	3	6	Westley Street	3	1
Spooner Street		4	Turner Street	2	8	Weston Street	1	9
Spring Hill	5	16	Twynning Road		5	Wharf Lane		2
Spring Hill Passage	1	4				Wharf Street	1	6
Spring Road		9	U			Wharton Street		3
Spring Street		5	Unett Street	6	22	Wheeler Street	4	29
Spring Vale		1	Union Passage			Wheley's Lane		3
Springfield Street	5	18	Union Street			Wheley's Road		2
Stafford Street		6	Upper Cox Street	1	3	Whitby Road	1	1
Stanhope Street	3	3	Upper Dean Street			White Road	2	7
Stanforth Street	6	11	Upper Gough Street	3	6	White Street		1
Stanley Road			Upper Highgate Street	1	14	Whitehall Road	3	10
Stannmore Road		3	Upper Marshall Street			Whitmore Road		7
						Whitmore Street		11
						Whittall Street		4
						Wiggin Street		4

STREETS.	Zymotic Diseases.	Other Diseases.	STREETS.	Zymotic Diseases	Other Diseases	STREETS.	Zymotic Diseases.	Other Diseases.
Willes Road.....	1	14	X			ADDENDA.		
William Street	9	30						
William Street North ..	2	12						
William Edward Street..	1	3						
William Henry Street ..	4	6						
Willis Street	1	7	Y			Not located	25	311
Willow Avenue								
Willows Crescent		2						
Willows Road	1	3						
Wilton Street	2	5						
Wimbourne Road					3			
Windmill Street.....								
Windsor Street	1	29						
Winson Street.....	3	13						
Winson Green Road	1	14						
Witton Street.....	3	8	Z	1	1			
Wolseley Street	3	4						
Wood Lane	1	1						
Wood Street.....		5						
Woodbourne Road.....								
Woodcock Street	3	11						
Woodfield Road	1	5						
Wood Green Road.....								
Woodville Road.....								
Worcester Street								
Wordsworth Road.....		3						
Wrentham Street	2	15						
Wright Road	2	16						
Wright Street		8						
Wrottesley Street								
Wyndcliff Road		2						
Wyndham Road								
Wynn Street	2	13						
						TOTALS	1665	8737

Grand Total ... 10402

REPORT
ON
ADULTERATION.

CITY ANALYST'S LABORATORY.

THE COUNCIL HOUSE, BIRMINGHAM,

FEBRUARY 15th, 1902.

TO THE HEALTH COMMITTEE

MR CHAIRMAN AND GENTLEMEN,

I beg to report that during the year 1901 I received for analysis 1,267 samples of food, drugs, and drink. One sample was submitted by a private purchaser, and the remainder by the Food and Drug Inspector, Mr. H. I. Jones.

In the following table the samples analysed during the last two years are divided into four classes, the adulterated articles being separated into those adulterated with preservatives only, and those adulterated in other ways:—

TABLE A.—TOTAL SAMPLES.

CLASSES.	Number analysed.		Number adulterated.			
			Preservatives only.		Other ways.	
	1900.	1901.	1900.	1901.	1900.	1901.
Samples of Food	1,048	1,100	129	131	97	83
Samples of Drink	37	85	0	4	2	7
Samples of Drugs	61	70	0	0	7	6
Samples of Margarine and Margarine-Cheese	6	12	0	0	6	12
Total Samples	1,152	1,267	129	135	112	108

The number of samples of drugs analysed was almost the same as in the previous year, but the other three classes showed a decided increase. The total number of samples was considerably greater than in any former year.

Last year 242 samples were purchased for each 100,000 persons living in Birmingham. In 1900 the proportion was 222 per 100,000 of the population, and the corresponding figures for London were 299, and for England and Wales as a whole 196.

The following table gives particulars of the samples analysed since 1873:—

TABLE B.—TOTAL SAMPLES.

Years.	Samples per Annum.		Percentage of Adulteration.		Samples of Margarine per Annum.
	Number.	Per 100,000 Persons.	Preservatives only.	Other ways.	
1873-1876	83	23	1	47	0
1877-1881	175	45	1	24	0
1882-1886	616	150	0	16	0
1887-1891	836	198	0	12	2
1892-1896	1,074	218	2	11	5
1897-1901	1,168	227	11	10	10
1897	1,145	226	11	13	17
1898	1,146	225	9	10	8
1899	1,131	220	10	11	7
1900	1,152	222	11	9	6*
1901	1,267	242	11	8	12

* Two of the samples were unlabelled margarine-cheese.

The proportion of adulteration by preservatives only last year showed very little difference from that of the previous four years. Before the year 1896 samples of milk and butter were not systematically examined for preservatives, and, therefore, the amount of adulteration with preservatives only for earlier years appears much less than the last five years.

The proportion of adulteration in other ways than by preservatives—eight per cent.—is the same as in 1886, and lower than any other year. During the first four years of the table no less than forty-seven per cent. of the samples were found to be adulterated; in the next quinquenniad the proportion was reduced to twenty-four per cent.; since then the improvement has been steadily maintained, and the average of the last five years showed ten per cent. of adulteration not due to the presence of preservatives.

The Report of the Local Government Board for 1890 states that ten per cent. of the samples analysed in London, and nine per cent. of the total samples examined in England and Wales, were reported to be adulterated, but no information is given as to the number of articles condemned because of the presence of preservatives.

I.—SAMPLES OF FOOD.

The following table gives a list of the articles of food received, classed as genuine and adulterated. The number of samples of margarine found to be unlabelled during exposure for sale is also indicated. The corresponding lists of articles of drink and drugs are given in tables M and O respectively :—

TABLE C.—SAMPLES OF FOOD.

Articles.	No. of Samples Analysed.		No. of Samples Adulterated.	
	Total.	Genuine.	Preservatives only.	Other ways.
Milk	452	376	28	48
Skimmed Milk	1	0	0	1
Butter	359	228	103	28
Coffee	111	105	0	6
White Pepper	38	38	0	0
Cheese	31	31	0	0
Sugar Confectionery	25	25	0	0
Bread	21	21	0	0
Flour	19	19	0	0
Self-Raising Flour	6	6	0	0
Oatmeal	14	14	0	0
Lard	14	14	0	0
Arrowroot	8	8	0	0
Castor Sugar	1	1	0	0
Margarine	1,100	886	131	83
	12			
	1,112			

MILK.

During the year 452 samples of "milk," and one adulterated sample of "skimmed milk," were submitted for analysis. Twenty-seven of the samples of "milk" were adulterated with water, two with boric acid and water, and four with formic aldehyde and water. Four samples were deficient in fat, and eleven samples had been adulterated with water as well as partially creamed, one of them also containing formic aldehyde. Altogether eleven per cent. of the samples were adulterated in these ways. In 1900 the corresponding figure was thirteen per cent.

In addition to the above, three samples were adulterated with 0·016 to 0·06 per cent. of boric acid, and twenty-five contained formic aldehyde. Six per cent. of the samples were adulterated with preservatives only, as compared with eight per cent. in 1900.

Eighty-six samples of milk were analysed last year for each 100,000 persons living in Birmingham. In 1890 the proportion for Birmingham was 69; for London, 126; and for England and Wales, 73 samples.

TABLE D.—MILK, SKIMMED MILK, SEPARATED MILK.

Years.	Samples per Annum.	Percentage of Adulteration.		Cautions per Annum.	Prosecutions per Annum.	Fines per annum.		
		Preserva- tives only.	Other ways.			£	s.	d.
1873-1876	28	—	54	0	8	5	5	0
1877-1881	56	—	54	3	15	17	7	0
1882-1886	184	—	31	18	28	26	4	5
1887-1891	206	—	19	15	17	28	2	11
1892-1896	354	—	16	24	33	38	2	5
1897-1901	420	7	13	10	42	69	12	11
1897	399	7	14	27	44	58	6	0
1898	449	9	11	20	36	46	12	6
1899	442	7	17	1	53	112	1	0
1900	359	8	13	0	39	90	2	6
1901	453	6	11	0	37	41	2	6

The above table shows that the percentage of adulteration by preservatives only was lower last year than in either of the four previous years during which all samples of milk had been systematically examined for preservatives.

Last year the proportion of adulteration in other ways than by preservatives was the same as in 1898, but better than any year except 1894, when ten per cent. of the samples were thus adulterated.

During the nine years 1873-1881 more than half of the samples of milk received were adulterated. Each quinquenniad since has shown an improvement on its predecessor, and the average of the last five years was thirteen per cent.

The Report of the Local Government Board for 1900 stated that fourteen per cent. of the samples of milk analysed in London, and eleven per cent. of those examined in England and Wales as a whole, were adulterated, but no information is given as to what proportion of them were adulterated with preservatives.

In the next table is given the average composition of all the samples of milk examined during the last eight years. It will be noticed that in each year the percentage of fat is higher than 3·5, and that the percentage of solids not fat, with one exception, amounts to 8·5, the standards which I have used for the past thirteen years for calculating the percentage of adulteration of sophisticated samples, and that this is in spite of the fact that all samples, even the heavily adulterated ones, are included in these averages. This shows that my standard for calculation is fair and reasonable:—

TABLE E.—AVERAGE COMPOSITION OF ALL “MILK” SAMPLES.

Year.	Total Solids, per cent.		Fat, per cent.		Solids, not Fat, per cent.	
1894	..	12·3	...	3·7	...	8·6
1895	..	12·2	...	3·8	...	8·4
1896	..	12·2	...	3·7	...	8·5
1897	..	12·2	...	3·7	...	8·5
1898	..	12·4	...	3·9	...	8·5
1899	...	12·2	...	3·6	...	8·6
1900	..	12·2	...	3·7	...	8·5
1901	..	12·2	...	3·6	...	8·6

In my last Annual Report I called attention to the Report of the Departmental Committee that had been appointed by the Board of Agriculture to consider the advisability of regulations being made for milk and cream. As a result of this enquiry, the following regulations have been issued :—

BOARD OF AGRICULTURE RULES.

(Dated 5th August, 1901.)

SALE OF MILK REGULATIONS, 1901.

The Board of Agriculture, in exercise of the powers conferred on them by Section 4 of the Sale of Food and Drugs Act, 1899, do hereby make the following Regulations :—

MILK.

1. Where a sample of milk (not being milk sold as skimmed, or separated, or condensed, milk) contains less than 3 per cent. of milk-fat, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-fat, or the addition thereto of water.

2. Where a sample of milk (not being milk sold as skimmed, or separated, or condensed, milk) contains less than 8·5 per cent. of milk-solids other than milk-fat, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water.

SKIMMED OR SEPARATED MILK.

3. Where a sample of skimmed or separated milk (not being condensed milk) contains less than 9 per cent. of milk-solids, it shall be presumed for the purposes of the Sale of Food and Drugs Acts, 1875 to 1899, until the contrary is proved, that the milk is not genuine, by reason of the abstraction therefrom of milk-solids other than milk-fat, or the addition thereto of water.

EXTENT.

4. These Regulations shall extend to Great Britain.

COMMENCEMENT.

5. These Regulations shall come into operation on the First day of September, One thousand nine hundred and one.

SHORT TITLE.

6. These Regulations may be cited as the Sale of Milk Regulations, 1901.

In witness whereof the Board of Agriculture have hereunto set their Official Seal this fifth day of August, One thousand nine hundred and one.

L.S.

T. H. ELLIOTT, *Secretary.*

These regulations require that any sample of milk containing less than three per cent. of milk fat or less than 8·5 per cent. of solids not fat, that is 11·5 per cent. of total solids, shall be presumed to be adulterated. In the following table the milks analysed during the year are classified according to the percentage of total solids present, comparative figures for the previous year being also given. Last year 11·7 per cent. of the samples contained less than 11·5 per cent. of total solids, while the corresponding figure for 1900 was 14·5 per cent. The worst sample was obtained from a retail dealer, and contained 8·1 per cent. of total solids; it was composed of forty-six parts of genuine milk, thirty-one parts of milk devoid of fat, and twenty-three parts of water. The best sample was also bought from a retail dealer, and contained 17·6 per cent. of total solids. and was, therefore, more than twice as rich as the worst sample :—

TABLE F.—COMPOSITION OF ALL SAMPLES OF MILK.

Percentage of Total Solids.	Number of Milks, 1901.			Percentage of Total Milks.	
	Wholesale only.	Wholesale and Retail.	Retail only.	1901	1900
7·7—	0	0	0	0·0	0·3
8·1—	0	0	4	0·9	0·6
9—	1	0	1	0·4	2·8
10—	1	1	13	3·3	4·7
11—	5	2	25	7·1	6·1
11·5—	14	8	75	21·4	17·6
12—	38	14	184	52·2	51·5
13—	4	5	47	12·4	13·6
14—	0	1	5	1·3	2·2
15—	0	0	2	0·4	0·3
16—	0	0	1	0·2	0·3
17·6	0	0	1	0·2	0·0
Total	63	31	358	100·0	100·0

Preservatives were detected in 35 samples of milk during the year. Seven of them had also been sophisticated by the addition of water, or the abstraction of fat. Five samples contained from ·016 to 0·06 per cent. of boric acid, and 30 samples contained formic aldehyde. Altogether 7·7 per cent. of the samples of milk were adulterated with preservatives. The following table gives the corresponding figures for previous years :—

TABLE G.—ADULTERATION OF SAMPLES OF " MILK " WITH PRESERVATIVES.

Year.	Boric Acid, per cent.	Formic Aldehyde, per cent.	Both Preservatives, per cent.	Total, per cent.
1896 (April to December)	8·3	—	—	—
1897	5·5	3·3	0	8·8
1898	2·9	6·6	0·7	10·2
1899	0·9	7·5	0·2	8·6
1900	2·8	7·8	0·8	11·4
1901	1·1	6·6	0	7·7

In 1896 all samples of milk were first systematically examined for boric acid, and in the following year formic aldehyde was also tested for. The amount of adulteration with these preservatives last year was less than in either of the four previous years.

In 1899 a Departmental Committee was appointed by the Local Government Board to inquire into the use of preservatives and colouring matters in food. It received evidence from 78 witnesses, including myself, and towards the end of last year a bulky report was published. The report contained the following recommendation with regard to milk:—

“ That the use of any preservative or colouring matter whatever in milk offered for sale in the United Kingdom be constituted an offence under the Sale of Food and Drugs Act.”

In its report the reasons for making this recommendation are given as follows:—

“ Milk, a very perishable substance, peculiarly liable to bacterial contamination, forms a very large proportion of the daily food of the public. The nutrition of infants and young children depends greatly on the purity and abundance of the milk supply; and, seeing how frequently milk is prescribed for invalids and convalescents, it is of the utmost importance that it should not be the vehicle of any unsuspected agent. . . .

“ Moreover, there exists at present no guarantee against the addition of excessive amounts of preservatives to milk. In 1896 the Medical Officer of Health for Birmingham estimated the amounts of boracic acid in a number of milk samples. Of these, one-half showed boracic acid in a proportion not exceeding 21 grains per gallon; in one-fourth the proportion varied between 21 and 42 grains per gallon; while in the remaining fourth it ranged from 42 up to 126 grains per gallon. . . .

“ Clearly such random use of any drug in a food calls for regulation. At present milk may be subjected to several successive treatments with preservative before it reaches the consumer. The farmer or producer sometimes applies it, so does the wholesale purveyor, so does the retail dealer; lastly, the domestic use of preservatives is increasing, and has become very general, and hence the milk may receive a fourth dose before it reaches the unsuspecting consumer.

“ There is this further objection to the use of preservatives in the milk traffic, that they may be relied on to protect those engaged therein against the immediate results of their neglect

of scrupulous cleanliness. Under the influence of these preservatives milk may be exposed without sensible injury to conditions which would otherwise render it unsaleable. It may remain sweet to taste and smell, and yet have incorporated disease-germs of various kinds, whereof the activity may be suspended for a time by the action of the preservative, but may be resumed before the milk is digested.

“ It has been put before us that it is not possible to supply large towns, especially London, with new milk without the aid of preservatives; but we have received abundant evidence to prove that this is no more than a matter of organisation and system. As to the feasibility of conducting the traffic in the largest towns without preservatives we have no doubt whatever. In Denmark the use of all preservatives in milk is strictly prohibited, and the prohibition is stringently enforced.

“ Evidence was given by a large London dairy company (the Aylesbury Dairy Company, Limited) that they used no preservative whatever either in milk, cream, or butter.

“ Even more conclusive of the practicability of supplying the Metropolis with milk unmixed with preservative was the evidence of Mr. T. Carrington Smith, who, during a series of several years consigned milk to London from mid-Staffordshire, a distance of 126 miles, under a contract which prohibited him from the use of preservatives. The milk was carefully strained and cooled by means of water, precautions which the witness pronounced indispensable, and there was never any trouble from the milk going sour. Mr. Smith, who appeared on behalf of the Royal Agricultural Society, handed in letters from farmers sending in the milk of from 500 to 1,500 cows daily to London from Farringdon and Dideot, without the use of preservatives.”

In each of my last five Annual Reports I have advocated the prohibition of the use of preservatives in milk, and it is satisfactory to find that my opinion is also held by the Departmental Committee, as a result of this important and lengthy inquiry.

The samples of milk may be divided into three classes according to their origin. Firstly, wholesale samples: these are taken from churns at the railway stations, or directly from farmers who do not sell milk retail. Secondly, those samples taken from persons who sell milk to smaller dealers and also do a retail trade. Thirdly, from shopkeepers who only sell in small quantities. Each quarter the Food Inspector has made a return to me, classifying the samples of milk in these three groups. The following table shows the difference in composition and in the amount of adulteration of these classes:—

TABLE H.—SOURCES OF MILK SAMPLES.

Vendor.	Wholesale only.	Wholesale and Retail.	Retail only.
Number of Samples	63	31	358
Adulteration, per cent.—			
Preservatives only	0	6	7
Other ways	11	6	11
Average Composition, per cent.—			
Total Solids	12·1	12·3	12·3
Fat	3·5	3·8	3·7
Solids, not fat	8·6	8·5	8·6

It is worthy of note that all the samples that were obtained from vendors who are not engaged in the retail trade were free from preservatives.

Owing to the influence of selection, the composition of the first two groups appears worse than it would do if the samples were taken indiscriminately. When a retail dealer who has sold an adulterated sample declares that he sold it as received, the Inspector obtains a sample from the wholesale dealer who supplied it. For example, No. 1069, containing nine per cent. of water in excess, was obtained from a retail dealer; and No. 1215 was taken from the wholesale and retail dealer who supplied him. Similarly, No. 1031 was bought from a retail dealer, who obtained his milk from the farmer from whom samples numbered 1115, 1117, and 1118 were procured. This farmer was fined £1 and costs in each case. As he sends large quantities of milk into Birmingham, these penalties do not appear to err on the side of severity.

Thirty-six prosecutions were instituted last year; in thirty cases convictions were obtained, the fines amounting to £41 2s. 6d. The average fine last year was £1 7s. 5d. In 1899 the average fine was £2 13s. 4d., and in 1900 £3 0s. 1d. Therefore, the average fine last year was less than half of that of the previous year. It appears that magistrates hardly realise the serious nature of milk adulteration, and one fears that until heavier fines are inflicted there is little hope of a pure milk supply for the city.

The following are the cases of adulterated "Milk," in which action was taken:—

NO.	DATE.	ADULTERATION.	ACTION.
112—	Feb. 7th ...	Fat deficient 30%... ..	Fined £2 and 8s. costs.
141—	„ 15th ...	Water in excess 11%, boric acid 0·025%	Fined 2s. 6d. and 8s. costs.
142—	„ 15th ...	Water in excess 11%	Fined 10s. and 8s. costs.
185—	„ 26th ...	Water in excess 10%	Fined £2 and 8s. costs.

188—Feb. 26th ...	Water in excess 8° and fat deficient 26°	Fined £3 and 8s. costs.
189—,, 26th ...	Fat deficient 22°	Fined £2 and 8s. costs.
244—Mar. 12th ...	Water in excess 14°	Fined £1 and 8s. costs.
247—,, 12th ...	Water in excess 17°	Fined £2 and 8s. costs.
256—,, 13th ...	Water in excess 23° and fat deficient 31°	Fined £2 and 8s. costs.
379—Apr. 13th ...	Water in excess 8° and fat deficient 14°	Fined 10s. and 8s. costs.
398—,, 18th ...	Water in excess 9° and fat deficient 11°	Fined 10s. and 8s. costs.
406—,, 19th ...	Water in excess 7° and fat deficient 10°	Fined 10s. and 8s. costs.
423—,, 26th ...	Water in excess 11° and fat deficient 11°	Fined £2 and 9s. costs.
562—June 4th ...	Water in excess 25°	Fined £5 and 19s. costs.
577—,, 7th ...	Water in excess 8°	Prosecution withdrawn, same defendant as No. 562.
583—,, 11th ...	Water in excess 9° and fat deficient 16°	Fined 10s. and 8s. costs.
589—,, 11th ...	Water in excess 11° and fat deficient 14°	Fined 10s. and 8s. costs.
613—,, 18th ...	Fat deficient 20°	Fined 10s. and 8s. costs.
624—,, 18th ...	Fat deficient 28°	Fined £2 and 9s. costs.
737—July 19th ...	Water in excess 25° and fat deficient 12°, formic aldehyde	Fined 5s. and 8s. costs.
738—,, 19th ...	Water in excess 21°, formic aldehyde	Fined 5s. and 8s. costs.
939—,, 19th ...	Water in excess 29°	Vendor absconded.
740—,, 19th ...	Water in excess 10° and fat deficient 7°	Fined £2 and 8s. costs.
847—Sept. 17th ...	Water in excess 7°	Fined £2 and 8s. costs.
849—,, 17th ...	Water in excess 24°, formic aldehyde	Prosecution withdrawn, owing to the death of the defendant.
856—,, 17th ...	Water in excess 12°, formic aldehyde	Fined £1 and 8s. costs.
957—Oct. 14th ...	Water in excess 7°	Vendor absconded.
1031—,, 31st ...	Water in excess 6°	Prosecution withdrawn, wholesale dealer fined for Nos. 1115, 1117, & 1118.
1069—Nov. 12th ...	Water in excess 9°	Case withdrawn. Guarante tee proved from Vendor of No. 1215.
1115—,, 21st ...	Water in excess 6°	Fined £1 and 17s. costs.
1117—,, 21st ...	Water in excess 7°	Fined £1 and 11s.6d. costs.
1118—,, 21st ...	Water in excess 10°	Fined £1 and 11s.6d. costs.
1144—,, 28th ...	Water in excess 7°	Fined £2 and 8s. costs.
1215—Dec. 17th ...	Water in excess 7°, boric acid 0·02%	Fined £2 and 13s. costs.
1221—,, 17th ...	Water in excess 10°	Fined £1 and 8s. costs.
1252—,, 31st ...	Water in excess 10°	Fined £1 and 8s. costs.

The single sample of so-called "skimmed milk" No. 790 was adulterated with fifteen per cent. of water, and had only been partially skimmed. It was, therefore, not skimmed milk in the accepted sense. As the vendor had been fined £5 in 1900 for milk adulterated in a similar manner, the fine of £10 and 8s. costs inflicted by the Magistrates cannot be considered excessive.

BUTTER AND MARGARINE.

I received 359 samples of butter and 12 samples of margarine for analysis last year. The number of samples of butter adulterated with boric acid only was 103, equal to 29 per cent. Twenty-eight samples, or eight per cent. contained either foreign fat or an excess of water.

The Report of the Local Government Board for 1900 states that ten per cent. of the samples analysed in London and eight per cent. of those analysed in England and Wales as a whole were adulterated, but no information is given as to what proportion were adulterated with preservatives only.

The next table gives comparative figures for the samples analysed in past years in Birmingham :—

TABLE J.—BUTTER AND MARGARINE.

Years.	Number of Samples.	Butter.		Margarine.	Number of Cautions.	Number of Prosecutions.	Amount of Fines.		
		Percentage of Adulteration.							
		Preserva- tives only.	Other ways.	Number of Samples.					
1873-1881	36	—	17	—	0	3	£	s.	d.
1882-1886	153	—	35	—	14	32	1	5	0
1887-1891	373	—	26	8	13	74	18	18	6
1892-1896	957	—	13	23	28	126	107	12	6
1897-1901	1,630	28	8	48	6	184	268	4	6
1897	301	32	11	17	0	41	570	16	0
1898	347	19	11	8	6	48*	107	10	0
1899	320	26	5	7	0	29	198	1	0
1900	291	33	7	4	0	24†	97	0	0
1901	371	29	8	12	0	42†	68	10	0
							99	15	0

* One prosecution was for manufacturing margarine in an unregistered factory.

† A wholesale dealer in margarine was prosecuted for not being registered.

The number of samples of butter and margarine analysed last year was considerably greater than in any previous year. Forty-two prosecutions were instituted, and fines to the amount of £99 15s. were inflicted. The average fine again showed a decrease: in 1898 it was £4 12s. 1d.; in 1899, £3 17s. 7d.; in 1900, £3 5s. 3d.; and last year, £2 18s. 8d. Considering the large profits to be made by the sale of adulterated butter, this practice will hardly be stopped by fines of this light nature.

In the following table all the samples of butter and margarine are classified according to the percentage of boric acid present :—

TABLE K.—QUANTITY OF BORIC ACID IN BUTTER AND MARGARINE.

Boric Acid. Per cent.	Number of Samples,			Percentage of Total Samples.
	Foreign Fat present.	Foreign Fat absent.	Total.	
Less than 0·1	3	18	21	15
0·1—0·19	6	24	30	21
0·2—0·29	7	16	23	16
0·3—0·39	6	19	25	17
0·4—0·5	0	20	20	14
0·51—0·59	0	5	5	3
0·6—0·69	3	7	10	7
0·7—0·78	1	3	4	3
0·8—0·85	0	2	2	1
0·9	0	1	1	1
1·0	0	2	2	1
1·1	0	1	1	1
Total	26	118	144	100

The Preservative Committee, to which reference has previously been made, have recommended: "That the only preservative permitted to be used in butter and margarine be boric acid, or mixtures of boric acid and borax, to be used in proportions not exceeding 0·5 per cent. expressed as boric acid." The foregoing table shows that 17 per cent. of the samples of butter and margarine which contained boric acid exceeded this limit.

Three prosecutions were instituted for the sale of butter adulterated with boric acid only, and the results were as follows:—

NO.	DATE.	ADULTERATION.	ACTION.
352—	April 4th ..	Boric acid 0·8%	...Prosecution dismissed on the defendant proving a guarantee. The vendor had been fined £5 5s. for margarine and adulterated butter in 1898.
573—	June 6th ..	Boric acid 0·85%	...Fined £2 and 9s. costs.
889—	Sept. 24th...	Boric acid 0·78%	...Fined £1 and 9s. costs. The sample was marked "Guaranteed Perfectly Pure."

Thirteen samples of butter contained an excessive quantity of water, and in eleven of them boric acid was also present. The sale of samples of butter containing a large quantity of water in Birmingham has been very rare; in 1893 I certified three such samples as adulterated, but from that date until last year no sample of butter containing an excessive quantity of water has been examined. The average amount of water in samples as I have received them is about 13 per cent., and I consider that any amount in excess of 16 per cent. must be considered as adulteration. Each of the above-mentioned samples contained 19 per cent. of water, or more.

Samples numbered 301 and 302 were from the same vendor. As a result of several determinations, I certified that No. 301 contained 1·0 per cent. of boric acid and 22·0 per cent. of water, and that No. 302 contained 1·0 per cent. of boric acid and 20·0 per cent. of water. The process used for the determination of the boric acid had been carefully tested and found to give results somewhat below the truth. I consider, therefore, that the amount of boric acid in each case was rather more than 1·0 per cent., and that my certificates were slightly in favour of the vendor.

When the prosecutions came before the Magistrates, the defendants admitted that an excess of water was present, but maintained that I had seriously over-estimated the quantity of boric acid. The cases were, therefore, adjourned in order that the samples might be analysed in the Government Laboratory.

At the adjourned hearing the certificates of the Government chemists were read. They certified that No. 301 contained 0·39 per cent. of boric acid and 21·25 per cent. of water, and that No. 302 contained 0·48 per cent. of boric acid and 21·06 per cent. of water. In each case the amount of water found was in practical agreement with my results, but the boric acid was *less than half the quantity* I certified.

These discrepancies were a great surprise to me, as I felt sure that my certificates slightly *understated* the quantity of boric acid present. For confirmation, I sent part of my sample to an eminent dairy chemist, and another part to a public analyst, without giving any indication of my own results, with the request that they would determine the quantity of boric acid present in each sample. The following table gives their reports, as well as mine and those of the Government chemists:—

					Percentage of Boric Acid.	
					No. 301.	No. 302.
Government Laboratory	...	...	...	...	0·39	0·48
My own certificates	...	...	...	...	1·0	1·0
Dairy Chemist	...	...	...	...	1·03	1·13
Public Analyst	...	...	...	...	1·08	1·09

It will be seen that for each sample the figures of these chemists are slightly *higher* than my own, and more than twice as great as those of the Government chemists. I wrote to the principal Government chemist, asking if he could offer any explanation of the remarkable results obtained by his assistants. I pointed out to him that if such differences had been found in a *single* sample, an explanation might be found in the possibility of the boric acid not being uniformly distributed through the sample; but that when such differences occurred with *two* samples, the explanation was improbable, and that it appeared as if his assistants had made some mistake. He replied that he had carefully examined their analytical results, and repudiated the idea that any mistake had been made, but made no answer to a further suggestion of mine that his samples should be analysed again, either by himself or by some chemist of standing.

The following are the cases in which legal action was taken, and also the results of the prosecutions:—

NO.	DATE.	ADULTERATION.	RESULT OF PROSECUTION.
274—	Mar. 15th...	Water in excess at least 6%, boric acid 0·9%	Fined £2 and 9s. costs.
301—	„ 21st...	Water in excess at least 6%, boric acid 1·0%	Fined £5 and £5 costs.
302—	„ 21st...	Water in excess at least 4%, boric acid 1·0%	Prosecution withdrawn. Same vendor as No. 301.
434—	Apr. 30th ...	Water in excess at least 3½%, boric acid 1·1%	Prosecution dismissed on defendant proving a guarantee. The whole- sale dealer was fined £10 and 19s. 6d. costs for giving a false warranty.
723—	July 17th ...	Water in excess at least 6%, boric acid 0·45%	Fined 5s. and 8s. costs.
1260—	Dec. 31st ...	Water in excess at least 6%, boric acid 0·3%	Fined £1 and 9s. costs.
1262—	„ 31st ...	Water in excess at least 8%, boric acid 0·15%	Fined £1 and 9s. costs. Same vendor as Coffee No. 1261.

Fifteen samples of butter were adulterated with both foreign fat and boric acid. The vendor of sample No. 930 was prosecuted under the Sale of Food and Drugs Act, and the remainder under the section of the Margarine Act, which requires that every person selling margarine by retail shall in every case deliver the same to the purchaser in a paper wrapper, on which shall be printed in capital block letters, not less than a half of an inch long and distinctly legible, “Margarine.”

The vendor of sample No. 416 proved a guarantee, and margarine No. 522 was obtained from the wholesale dealer who supplied him. The wholesale dealer was fined, and subsequently the retail dealer proceeded against him in the County Court for damages. The Judge allowed him £2 2s. and costs for loss of wages in attending the police court and solicitor's fees.

The vendor of No. 434 proved that he had a guarantee, and in a subsequent action the wholesale dealer was fined £10 and costs for giving a false warranty.

Sample No. 930 was marked “Pure Danish Butter,” but contained 87 per cent. of foreign fat. Another sample taken from the same piece was pure butter, and the Inspector found that a small piece of butter had been carefully fitted into one end of a large lump of margarine. When the case was heard, the assistant who sold the butter said she was told by her employer to serve ordinary customers from the margarine end, but anyone she was suspicious about was to be served from the end which consisted of pure butter.

In the case of No. 980, the case against the owners of the shop was dismissed, as they proved that the assistant had been told not to sell margarine as butter. The owners prosecuted the assistant, and he was fined £2 and costs.

The results of the prosecutions were as follows :--

NO.	DATE.	RESULT OF PROSECUTION.
2—January 3rd	Fined £10 and 10s. costs.
27— „ 17th	Fined £2 and 8s. costs.
29— „ 17th	Fined £2 and 8s. costs.
268—March 15th	Fined £3 and 9s. costs. Same vendor as coffee No. 269.
383—April 16th	Fined £1 and 10s. costs.
415— „ 23rd	Ordered to pay 5s. costs. (Purchased from vendor of margarine No. 522.)
416— „ 23rd	Prosecution withdrawn. (Wholesale dealer fined for margarine No. 522.)
571—June 6th	Fined £3 and 9s. costs.
884—September 24th	Fined £3 and 9s. costs.
930—October 4th	Fined £20 and 9s. costs.
977— „ 17th	Fined 5s. and 8s. costs.
980— „ 17th	Summons against the owners dismissed. Assistant fined £2 and 9s. costs.
1005— „ 25th	Fined £2 and 8s. costs.
1199—December 10th	Fined £1 and 8s. costs.
1200— „ 10th	Fined £1 and 8s. costs. Same vendor as No. 1199

The twelve samples of margarine all contained large quantities of foreign fat, and, with one exception, boric acid as well. As a rule margarine contains about ten per cent. of water, but No. 235 contained nineteen per cent., which is a remarkably large proportion, and must have been fraudulently introduced.

No. 236 was exposed for sale with a tin label on it which was almost entirely illegible and very dirty; it was also wrapped in plain paper. The magistrates inflicted a small fine for each offence, and the vendor promised to give up the sale of butter.

The vendor of the single sample of margarine, No. 522, was fined for consigning margarine to a retail dealer not properly marked, and also for conducting a wholesale trade in margarine without being registered.

Sample of margarine No. 929 was bought at the same time as the sample of butter No. 930 referred to above. The magistrates, as it was a bad case, fined the vendor £20 for the butter; and when the prosecuting solicitor refused to withdraw the margarine prosecution, the magistrates dismissed it.

Margarine No. 934 contained an excess of butter fat. Section 8 of the Sale of Food and Drugs Act, 1899, enacts that "It shall be unlawful to manufacture, sell, expose for sale, or import any margarine the fat of which contains more than ten per cent. of butter fat." Forty-three per cent. of the fat of this sample was butter fat.

Below is given the results of the prosecutions :—

NO.	DATE.	OFFENCE.	RESULT OF PROSECUTION.
26—	Jan. 17th ...	Exposed for sale, not marked "Margarine"	Fined £1 and 8s. costs. The vendor had been fined 10s. for adulterated milk in 1899.
28—	„ 17th ...	Exposed for sale, not marked "Margarine"	Fined £5 and 11s. costs. The vendor had been fined £1 for adulterated butter in 1898.
126—	Feb. 12th ...	Exposed for sale, not marked "Margarine"	Fined £2 and 8s. costs.
127—	„ 12th ...	Exposed for sale, not marked "Margarine"	Fined £2 and 8s. costs.
235—	March 8th ...	Exposed for sale, not marked "Margarine"	Fined 5s and 8s. costs.
236 {	„ 8th ...	Exposed for sale, not marked "Margarine"	Fined 5s. and 8s. costs.
		Retail sale, not marked "Margarine"	Fined 5s. and 8s. costs.
522 {	May 20th ...	Wholesale consignment of Margarine not properly marked	Fined £5 and 12s. 6d. costs.
		Unregistered wholesale dealer in Margarine	Fined £2 and 8s. costs.
669—	July 4th ...	Exposed for sale, not marked "Margarine"	Fined £1 and 9s. costs.
890—	Sept. 24th ...	Exposed for sale, not marked "Margarine"	Fined 10s. and 8s. costs.
929—	Oct. 4th ...	Exposed for sale, not marked "Margarine"	Prosecution dismissed. Same vendor as butter No. 930.
934 {	„ 10th ...	Exposed for sale, not marked "Margarine"	Fined £5 and 8s. costs.
		Butter fat in excess, 33%	Prosecution withdrawn
1082—	Nov. 14th ...	Exposed for sale, not marked "Margarine"	Fined £2 and 8s. costs.

COFFEE.

Six of the 111 samples of coffee received, or eight per cent. were adulterated with amounts of chicory, varying from six to sixty-five per cent. Two others contained very small amounts, probably as the result of accident.

TABLE L.—COFFEE.

Years.	Number of Samples.	Percentage of Adulteration.	Cautions.	Prosecutions.	Fines.
1873-1881	86	14	0	3	£ s. d. 1 5 0
1882-1886	92	43	23	1	1 10 0
1887-1891	113	37	0	5	1 10 0
1892-1896	276	6	4	13	21 6 0
1897-1901	595	10	4	50	84 17 6
1897	142	15	3	18	29 15 0
1898	91	9	0	8	18 10 0
1899	111	11	1	10	16 5 0
1900	140	8	0	9	15 5 0
1901	111	5	0	5	5 2 6

The proportion of adulterated coffees last year was lower than any recent year, and much better than in 1897 and 1899. This may be partly due to the increase in the amount of fines during the last five years. During 1897-1901 the sum of £84 17s. 6d. was paid in fines, against £21 6s. in the previous five years.

In 1900 six per cent. of the samples of coffee analysed in London, and seven per cent. of those analysed in England and Wales as a whole were adulterated.

In the case of sample No. 316, which I certified to be adulterated with twenty per cent. of chicory, the defendant convinced the magistrates that a mistake had been made in serving the sample, and he was only ordered to pay costs. This sample gave very curious analytical results. Part of the sample I received from the Inspector contained thirty-four per cent. of chicory, but the other part had only twenty per cent. The defendant had the portion of the sample which was left with him analysed, and the chemist found five per cent. of chicory. After the case had been heard I obtained the third sample from the Inspector, and found that it only contained a very small proportion of chicory—not more than one per cent. On making inquiries I was informed that when the sample was sold the bulk of it was taken from a box which was emptied, and the remaining quantity necessary to make up the weight was taken from a canister. It appears probable that the greater part of the sample taken from the box was pure coffee, and that the small quantity from the canister was either chicory or a mixture of chicory and coffee. The sample was evidently not properly mixed, so that the three parts into which it was divided contained chicory in very various proportions, my sample about twenty-five per cent., the defendant's probably about five per cent., and the third sample being almost pure coffee. If this last sample had been sent to the Government Chemist at Somerset House, and reported on as practically genuine, it is probable that some very strong remarks would have been made upon the carelessness or incompetence of the Public Analyst, who found twenty per cent. of chicory in a sample of coffee that did not contain any! I have explained this case in detail, as it illustrates very clearly the risks Public Analysts run of having their certificates discredited through the sample not being properly mixed before division.

The following last gives particulars of the cases in which action was taken:—

NO.	DATE.	ADULTERATION.	RESULT OF PROSECUTION.
269—	Mar. 15th ...	Chicory, 65%	Fined £3 and 9s. costs Same vendor as butter No. 268.
316—	„ 23rd ...	Chicory, 20%	Ordered to pay 8s., the costs of the prosecution. The defendant convinced the Magistrates that a mistake had been made in serving the sample.
521—	May 17th ...	Chicory, 11%	Fined £1 and 12s. costs.
604—	June 15th ...	Chicory, 60%	Fined 2s. 6d. and 9s. costs.
1261—	Dec. 31st ...	Chicory, 25%	Fined £1 and 9s. costs. Same vendor as butter No. 1262.

OTHER ARTICLES OF FOOD.

Thirty-eight samples of *white pepper*, thirty-one of *cheese*, twenty-five of *sugar confectionery*, twenty-one of *bread*, nineteen of *flour*, six of *self-raising flour*, fourteen each of *oatmeal* and *lard*, eight of *arrow-root*, and a single sample of *castor sugar* were all found to be genuine.

II.—SAMPLES OF DRINK.

The subjoined table shows that eighty-five samples of drink were received, and that four were adulterated with preservatives only, and seven were adulterated in other ways.

TABLE M.—SAMPLES OF DRINK.

Articles.	Number of Samples Analysed.		Number of Samples Adulterated.	
	Total.	Genuine.	Preservatives only.	Other ways.
Beer	47	45	2	0
Ale	13	11	2	0
Gin	12	8	0	4
Irish Whiskey ..	7	5	0	2
Scotch Whiskey ...	6	5	0	1
Total	85	74	4	7

BEER, ALE.

Four of the sixty samples of *beer* and *ale*, or seven per cent., were adulterated. In 1900 all the twenty-six samples examined in Birmingham were genuine, as well as all the samples analysed in London, while nine per cent. of those examined in England and Wales as a whole were adulterated.

One of the forty-seven samples of *beer*, and one of the thirteen samples of *ale* was adulterated with boric acid. They were both obtained from one vendor. I have never before detected boric acid in beer or ale, but its presence illustrates the tendency to add preservatives to all articles of food or drink that can be considered at all likely to suffer from decomposition. One sample of beer contained common salt in the proportion of eighty-seven grains per gallon. Upon conviction the defendant gave notice of his intention to appeal to the Court of King's Bench on the ground that my certificate should have stated the quantities of the other constituents of the beer that were present as well as the amount of the common salt. The appeal, however, was not proceeded with, and the fine was paid. One sample of ale contained in each gallon sixty-five grains of potassium chloride in addition to forty grains of common salt. Arsenic was not detected in any of the samples.

NO.	DATE.	ARTICLE.	ADULTERATION.	ACTION.
58—	Jan. 26th	Beer	Boric acid 0·01% ...	Cautioned by the Health Sub-Committee.
59—	„ 26th	Ale	Boric acid 0·01% ...	Cautioned by the Health Sub-Committee.
64—	„ 29th	Beer	Common salt 87 grains per gallon ...	Fined £5 and 10s. costs.
282—	Mar. 19th	Ale	Alkaline chlorides 105 grains per gallon ...	Fined £5 and 8s. costs.

SPIRITS.

The following table gives the number of samples of spirits analysed in Birmingham during the last twenty-eight years in relation to the population, and also the percentages of adulteration. Comparative figures for London and England and Wales as a whole are also given:—

TABLE N.—SPIRITS.

Years.	Birming- ham. Samples per Annum.	Samples per 100,000 persons per annum.			Percentage of Adulteration.		
		Birming- ham.	London,	England & Wales.	Birming- ham.	London.	England & Wales.
1874-1881	7	2	6*	7*	54	19*	35*
1882-1886	7	2	7	8	23	11	22
1887-1891	6	1	8	9	13	11	19
1892-1896	21	4	15	13	16	13	18
1897-1901	17	3	17†	15†	17	9†	13†
1897	24	5	16	15	12	9	15
1898	25	5	20	16	8	9	12
1899	0	0	19	15	—	9	13
1900	11	2	14	15	18	8	13
1901	25	5	†	†	28	†	†

1877-1881 only.

† 1897-1900 only.

‡ Not yet available.

The above table shows that comparatively few samples of spirits are bought in Birmingham; thus, during the last five years only three samples have been purchased for each 100,000 of the population, or only one-fifth of the proportion taken in London and England and Wales as a whole. The proportion of adulteration in Birmingham is considerably higher than that of England and Wales, and nearly twice as high as in London. No improvement has taken place in Birmingham during the last fifteen years.

Five prosecutions were instituted last year, and in each case a conviction was obtained, fines being paid to the amount of £16.

The following are the samples on which action was taken:—

NO.	DATE.	ARTICLE.	ADULTERATION.	FINE.
1046—	Nov. 2nd	Irish Whiskey	Water in excess 5% ...	£2 and 8s. costs.
1050—	„ 2nd	Scotch Whiskey	Water in excess 5½% ...	£3 and 8s. costs.
1051—	„ 2nd	Gin	Water in excess 4% ...	£3 and 8s. costs. Same vendor as No. 1050.
1063—	„ 6th	Gin	Water in excess 8½% ...	£3 and 8s. costs.
1065—	„ 6th	Gin	Water in excess 14% ...	£5 and 8s. costs.

III.—SAMPLES OF DRUGS.

Below is given a list of the samples of drugs analysed last year, classed as genuine and adulterated :—

TABLE O.—SAMPLES OF DRUGS.

Articles.	No. of Samples Analysed.	No. found to be Genuine.	No. found to be Adulterated.
Compound Tincture of Benzoin ...	16	15	1
Seidlitz Powders ...	14	12	2
Compound Tincture of Rhubarb ...	8	8	0
Paregoric ...	7	7	0
Camphorated Oil... ..	7	6	1
Tincture of Iodine	6	5	1
Purified Cream of Tartar ...	4	3	1
Compound Powder of Liquorice ...	4	4	0
Potassium Bicarbonate	4	4	0
Total ...	70	64	6

The following table includes comparative particulars of the proportion of adulteration, and of the legal proceedings instituted during the past twenty-nine years :—

TABLE P.—DRUGS.

Years.	Number of Samples.	Percentage of Adulteration.	Cautions.	Prosecutions.	Fines.
					£ s. d.
1873-1881	59	30	0	0	—
1882-1886	76	29	7	0	—
1887-1891	443	15	13	7	16 0 0
1892-1896	517	24	60	25	28 5 0
1897-1901	345	17	20	29	114 16 0
1897	108	19	7	4	11 1 0
1898	27	26	2	4	1 15 0
1899	85	22	7	12	25 0 0
1900	61	11	0	7	62 0 0
1901	64	9	4	2	5 0 0

Last year nine per cent. of the samples of drugs examined were adulterated. This proportion was slightly better than in 1900, when eleven per cent. were condemned, and considerably better than in any recent year, the average for the three previous years being twenty-one per cent.

The Report of the Local Government Board for 1900 indicates that during that year twelve per cent. of the samples of drugs bought in London were adulterated, and fifteen per cent. of those analysed in England and Wales as a whole.

COMPOUND TINCTURE OF BENZOINE.

Fifteen samples were of satisfactory strength, containing from 175 to 209 grammes of solid extract per litre. The remaining sample, No. 535, contained only 147 grammes, and I certified it to be adulterated, as it contained but 82 per cent. of the quantity of solid extract contained in the tincture prepared according to the British Pharmacopœia.

The vendor was prosecuted, and, at the hearing of the case, he applied for an adjournment, so that the third portion of the sample might be analysed by the Government Chemists. At the adjourned hearing their certificate was read, as follows :—

“ We hereby certify that we have analysed the contents of the bottle referred to (No. 535), and in our opinion it affords no evidence of being below the strength of the Compound Tincture of Benzoin made according to the process described in the British Pharmacopœia of 1898.”

The Deputy Town Clerk stated that as a matter of law the Somerset House certificate was not final, and that I had not given evidence. He, therefore, applied for a further adjournment. The defendant's solicitor objected, and, as the Magistrates considered that the defendant was entitled to a discharge, the case was withdrawn.

I may point out that there is nothing in the Sale of Food and Drugs Acts which makes the certificate of the Government chemists binding on the Magistrates. In the case *Wardle v. Edwards* the Recorder of Manchester said : “ I do not think that the certificates sent by the authorities at Somerset House at all takes away the responsibility of the Justices, or that of the Court of Quarter Sessions, who must give a perfectly independent decision upon the merits of the case, of course giving full weight to the opinion of the chemical officers of the Department at Somerset House.”

It is important to note that the above-quoted certificate of the Government chemists gives no analytical figures at all, but only an opinion. Now, in the case *Dargie v. Dunbar*, the Scots Court of Justiciary held that the reference to the Government chemists is to obtain the *results of the analysis*, and, therefore, their *opinion* as to what is the minimum percentage of fat to be found in milk cannot be received in evidence. If this Scotch court read the law aright, the certificate of the Government chemists for the tincture was absolutely worthless, as it contained no analytical figures, and ought not to have been received by the magistrates as evidence.

This leaves the matter in a very unsatisfactory position. If I had obtained an opportunity of giving evidence before the magistrates in support of my certificate I could have shown them that I had complete proof of the accuracy of my analysis and the reasonableness of my standard. Three determinations of the amount of solid extract in the tincture gave very concordant results, and these were confirmed by the very low specific gravity of the sample. Subsequently, at my request, Dr. Thorpe, the principal Government chemist, informed me that his assistants found 16·4 per cent. of solid extract. My result, 147 grammes per litre, is equivalent to 16·6 per cent., being a little more favourable to the vendor. The difference, therefore, was not due to analysis, but to the difference of standards adopted by the Government chemists and myself.

My standard for calculation was 180 grammes of solid extract per litre. This standard has been advocated by a well-known manufacturing chemist, and also by the analysts to the Chemists' Defence Association, while a large firm of wholesale druggists has stated that the tincture should not contain less than about 200 grammes per litre.

A sample prepared in my own laboratory yielded 182 grammes per litre, and thirty-two samples bought from various chemists in the city and submitted to me by the Inspector since the issue of the 1898 British Pharmacopœia gave an average of 182 grammes: the average of the whole of the samples received, including two adulterated ones, is 180 grammes. Of these thirty-four samples, the two above-mentioned, containing respectively 115 and 147 grammes of solid extract, were certified as adulterated, and the vendors were prosecuted and fined £20 and £5 respectively; two, containing 158 and 169 grammes of solid extract, were somewhat deficient in strength; and the remaining twenty-one samples contained 174 to 209 grammes. In the face of these figures I cannot conscientiously pass a sample containing only 147 grammes per litre as genuine, as I feel it is neither fair to the public nor to careful chemists and druggists, as it puts a premium on the use of inferior ingredients.

I may explain that benzoin, the chief ingredient in this tincture, is required by the British Pharmacopœia to be "almost entirely soluble" in alcohol, and that some commercial samples contain thirty per cent. of bark. If the prescribed quantity of such a sample is used for preparing the tincture instead of one of the official quality, the resulting tincture must be of very inferior strength. The editor of the *Pharmacopœia*, in his 1898 report, remarks that "Benzoin containing the usual varying proportions of bark (1 to 30 per cent.) may be employed, but allowance must of course be made for the insoluble matter, so that one pint of the official tincture shall be prepared from two ounces of *benzoin*, and not from two ounces of benzoin and bark." Apparently the sample in question had been prepared from "benzoin and bark," and how the chemists at Somerset House could say that it afforded "no evidence of being below the strength of the compound tincture of benzoin made according to the process described in the British Pharmacopœia," excites my wonder and passes my comprehension. It is most unsatisfactory, not to say disheartening, that the certificate of a Public Analyst, who has given special attention to the subject, should be discarded in favour of one giving no analytical details and no standard, for I feel sure that if the case had been fully heard and the Somerset House chemists made to state their analytical results and submit to cross-examination, the Magistrates must have convicted the defendant.

SEIDLITZ POWDERS.

Two of the fourteen samples of seidlitz powders were condemned. No. 896 contained an excess of twenty-nine per cent. of tartaric acid. The box was marked, "Warranted Genuine Seidlitz Powders. Full strength, made according to the formula of the British Pharmacopœia." No. 901 contained twenty-three per cent. of tartaric acid in excess of the proper quantity, the powder in the blue paper was of the correct composition, but its quantity was twenty-three per cent. too much. The box was marked "Extra." The British Pharmacopœia only recognises one strength of seidlitz powder, but an unofficial formula for "double" or "extra strong" requires the same amounts of tartaric acid and bicarbonate of soda as the British Pharmacopœia with

twice as much Rochelle salt. It will be seen that sample No. 901 agreed with neither the official nor the unofficial formula. The vendors of both these samples were cautioned by the Health Sub-Committee.

Sample No. 895 differed from any I have previously seen by having the *alkaline* powders wrapped in *white* paper, and the *acid* powders in *blue* papers.

Two of the eleven samples of seidlitz powders analysed in Birmingham in 1900 were adulterated, and nine per cent. of those examined in England and Wales.

CAMPHORATED OIL.

Six of the seven samples received contained from 19·8 to 21·4 per cent. of camphor, and were of full strength or nearly so. The other sample, No. 542, was very deficient in strength, containing only eight per cent. of camphor, or thirty-eight per cent. of the proper quantity. The vendor was fined £5 and 8s. costs. All the samples had been prepared with olive oil.

TINCTURE OF IODINE.

Five samples were of satisfactory composition and strength, but the sixth (No. 1109) contained 18·2 grammes of sodium iodide and 7·8 grammes of potassium iodide per litre, instead of 25 grammes of potassium iodide. This is quite a novel substitution, and was probably unintentional, as sodium iodide is more expensive than potassium iodide. The vendor was cautioned by the Health Sub-Committee.

CREAM OF TARTAR.

The four samples were brought under the Pharmacopœia name of "purified cream of tartar." One sample contained a minute trace of lead, two samples had a small quantity, and the remaining sample, No. 333, I certified to be adulterated with one grain of lead per pound. The vendor was cautioned by the Health Sub-Committee. Apart from the presence of lead all four samples were of satisfactory quality.

OTHER DRUGS.

Eight samples of *compound tincture of rhubarb*, seven of *paregoric*, four of *compound powder of liquorice*, and four of *potassium bicarbonate* were all found to be genuine.

III.—LEGAL PROCEEDINGS.

The following table shows what articles were found to be adulterated, with the proceedings taken and the amounts of the fines inflicted by the magistrates:—

TABLE Q.—LEGAL PROCEEDINGS.

ARTICLES.	OFFENCES.	CAUTIONS.	PROSECUTIONS.	FINES.	AMOUNT OF FINES.		
					£	s.	d.
Milk	76	0	36*	30	41	2	6
Skimmed Milk ...	1	0	1	1	10	0	0
Butter	131	0	27†‡	21	73	10	0
Margarine	15	0	15§	13	26	5	0
Coffee	6	0	5‡	4	5	2	6
Gin	4	0	3	3	11	0	0
Irish Whiskey ...	2	0	1	1	2	0	0
Scotch „	1	0	1	1	3	0	0
Beer	2	1	1	1	5	0	0
Ale	2	1	1	1	5	0	0
Seidlitz Powders ...	2	2	0	0	—		
Compound Tincture of Benzoin ...	1	0	1	0	—		
Camphorated Oil ...	1	0	1	1	5	0	0
Tincture of Iodine ...	1	1	0	0	—		
Purified Cream of Tartar	1	1	0	0	—		
Total	246	6	93	77	£187	0	0**

*Four cases were withdrawn and two vendors absconded.

†Two cases were withdrawn and three cases dismissed.

‡One vendor was ordered to pay the costs of prosecution on

§One case was withdrawn and one case was dismissed.

|| One case was withdrawn.

**The costs of the prosecutions amounted to £39 18s.

Below are given the results of the prosecutions: the corresponding figures for the previous two years are also given for comparison. Several cases were withdrawn or dismissed, either because the vendor was fined for another sample, or because the wholesale dealer from whom the adulterated sample was bought was fined:—

TABLE R.—PROSECUTIONS.

RESULT OF PROSECUTION.				NUMBER OF CASES.		
				1899.	1900.	1901.
Vendor fined £20	...	...	...	0	2	1
„ £15	...	...	...	1	0	0
„ £10	...	...	...	6	4	3
„ £5	...	...	...	18	16*	9
„ £3	...	...	...	8	11	9
„ £2	...	...	...	20	18	21
„ £1	...	...	...	15	9	17
„ 10s.	...	...	...	10	4	8
„ 5s.	...	...	...	9	17	7
„ 2s. 6d.	...	...	...	0	1	2
„ 1s.	...	...	...	1	0	0
Vendor ordered to pay costs only	...	...	...	5	11	2
Case withdrawn	...	...	...	9	5	8
Case dismissed	...	...	...	3	2	4
Vendor absconded	...	...	...	0	2	2
Total	...	...	...	105	102*	93

* In one case both the vendor and the wholesale dealer were fined.

The foregoing table indicates that the fines inflicted by the magistrates were lighter than usual. Last year fines of £5 and upwards were inflicted in thirteen cases, while in the two previous

years twenty-two and twenty-five such fines were paid. The average fine last year was £2 8s. 7d., against £2 19s. 8d. in 1900, and £2 17s. 1d. in 1899. The large increase in the number of offences in recent years is due to the inclusion of samples of butter and milk adulterated with preservatives. Before the year 1896 these were not systematically tested for.

TABLE S.—LEGAL PROCEEDINGS.

Year.	Number per Annum.				Fines.	
	Offences.	Cautions.	Prosecutions	Fines.	Per Annum.	Average.
					£ s. d.	£ s. d.
1873-1876	39	2	14	12	8 16 3	0 14 8
1877-1881	45	3	18	16	22 19 0	1 8 0
1882-1886	100	31	35	30	30 7 1	1 0 0
1887-1891	108	25	35	30	53 6 5	1 15 6
1892-1896	151	48	72	63	110 9 6	1 15 0
1897-1901	248	15	104	91	242 1 10	2 13 5
1897	284	39	126	119	257 17 0	2 3 4
1898	225	32	97	87	269 18 6	3 2 1
1899	245	9	105	88	251 6 0	2 17 1
1900	241	0	101	82	244 7 6	2 19 8
1901	246	6	93	77	187 0 0	2 8 7

IV.—REPORT OF THE COMMITTEE ON THE USE OF PRESERVATIVES AND COLOURING MATTERS FOR FOOD.

This Departmental Committee, which was appointed by the Local Government Board in 1899, and before which I gave evidence, has just issued a lengthy report. It has made the following recommendations :—

- (a) “ That the use of *formaldehyde* or *formalin*, or preparations thereof, in foods or drinks be absolutely prohibited, and that *salicylic acid* be not used in a greater proportion than 1 grain per pint in liquid food, and 1 grain per pound in solid food. Its presence in all cases to be declared.”
- (b) “ That the use of any preservative or colouring matter whatever in *milk* offered for sale in the United Kingdom be constituted an offence under the Sale of Food and Drugs Acts.”
- (c.) “ That the only preservative which it shall be lawful to use in *cream* be boric acid or mixtures of boric acid and borax, and in amount not exceeding 0·25 per cent. expressed as boric acid. The amount of such preservative to be notified by a label upon the vessel.”
- (d) “ That the only preservative permitted to be used in *butter* and *margarine* be boric acid or mixtures of boric acid and borax, to be used in proportions not exceeding 0·5 per cent. expressed as boric acid.”

- (e) "That in the case of all *dietetic preparations* intended for the use of invalids or infants chemical preservatives of all kinds be prohibited."
- (f.) "That the use of *copper salts* in the so-called greening of preserved foods be prohibited." (One member of the Committee dissented from this clause, but recommended "that the presence of copper in preserved vegetables should be in every case declared, and that its amount be restricted to half a grain of metallic copper per pound.")
- (g) "That means be provided, either by establishment of a separate Court of Reference, or by the imposition of more direct obligation on the Local Government Board, to exercise supervision over the use of preservatives and colouring matters in foods, and to prepare schedules of such as may be considered inimical to the public health."

I remain,

Mr. Chairman and Gentlemen.,

Your obedient Servant,

ALFRED HILL, M.D., F.I.C.,
City Analyst.

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